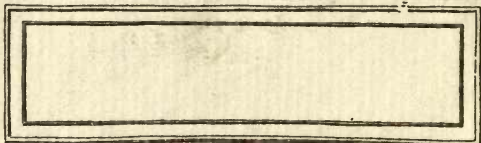


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THE EUROPEAN CLASS

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OBSERVATIONS  
ON THE CHARACTER AND CULTURE OF THE  
EUROPEAN VINE,

DURING A RESIDENCE OF FIVE YEARS IN THE VINE GROWING  
DISTRICTS OF

FRANCE, ITALY AND SWITZERLAND,

BY S. I. FISHER.

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TO WHICH IS ADDED, THE  
MANUAL OF THE SWISS VIGNERON,

As adopted and recommended by the Agricultural Soci-  
eties of Geneva and Berne.

BY MONS. BRUN, CHATELAIN, & CHATELAIN.

AND

THE ART OF WINE MAKING,

BY MONS. BULOS,

Member of the Institute of France.

TRANSLATED FROM THE FRENCH.

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PHILADELPHIA:

KEY AND BIDDLE—MINOR STREET.

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## PREFACE.

IN submitting to the agricultural community the following pages, I am incited by a deep conviction of the importance of the subject. Having long entertained a predilection for the Vine, I have been naturally led to an investigation of the habits of the plant, and an observation of the different methods of vine dressing in those countries where fortune has thrown me.

During a residence of five years in the vine districts of France, Switzerland, and Italy, I had the most favourable opportunities—particularly in Switzerland—to study the theory, and observe the practice of their cultivation and wine making; to inquire of intelligent proprietors the results of their operations and investments; to mix with the vine dressers in the several divisions of labour; and to compare with the agriculture of our country the expenses and returns of the land holder and farmer, under their peculiar circumstances and different cultivation. The result is, a decided conviction of the profits of vine growing, and a settled belief, that by adopting the system of Swiss cultivation, we shall in time succeed in the difficult task of acclimating to our country, the foreign vine. There is perhaps no vine country of Europe—certainly none which I have seen—where the cultivation of the Grape has attained so great a perfection, and where the results of the vintage are so *mediocre*; where the vine-

yard blooms in vernal luxuriance, the summer cheers with flattering hopes, and a treacherous autumn so illy redeems the deceptive promises of the seasons.

With few exceptions, I consider the wines of Switzerland to be the most inferior productions of the European Vine; and it is due to the skill and perseverance of the Swiss proprietor, and to the unwearied industry of the *vigneron* of the Cantons, that the sterile hills of their romantic country have attained their present value, and a culture formerly unknown, arrived at such perfection as to support the dense population with which the country teems.

Switzerland has but little commerce, and produces nothing to exchange for foreign luxuries. The government of the Cantons, aware of the deep stake at issue, and sensible of the importance of extending to this cultivation a fostering protection, has given to the members of it every possible facility at their command. Patriotic and public spirited individuals have associated in agricultural societies, inviting to their membership such practical vine-dressers, as can promote the objects of the cultivation, and improve by their writings, their experience, and their counsel, the system of Swiss vine-dressing; awarding to such as require it, pecuniary aid, and to others of more propitious circumstances, honorary testimonials, where skill and experiment have thrown new light on the subject, and improved the condition of the Swiss vine-dresser.

The Canton of Geneva has done much for the cultivation, by encouraging such societies, and

eliciting important information from practical vine growers. Among the best of these may be cited the little Manual of Mr. Brun Chappuis, adopted and recommended by the Agricultural Society of Geneva, and that of Mr. Reymondin. The first of these is a treasure to the vine grower. 'Tis a breviary of practical instructions on the duties of the vineyard, and contains such plain and concise directions, as can scarcely fail, if properly attended to, of resulting in the establishment of a successful vineyard.

This little pamphlet—now out of print—was difficult of access; but through the influence of my friend Mr. Charles de Bonstetten, of Geneva and Valeyres, I procured it—and having translated, have annexed it to this work. One chapter of Mr. Reymondin I have also translated, that the agriculturalist may compare in part the system of each. Though containing a fund of practical instruction, his work is encumbered with much irrelevant matter. In giving the chapter here annexed, I have husked the chestnut, retaining the kernel, and rejecting the useless burr.

Wine making is better understood in France than in Switzerland. Many valuable works have been written on the subject by the French masters. The treatise of Chaptal is pre-eminent, and such as was to be expected from the pen of that distinguished chemist. It is however too elaborate for our purpose, and fit only for the advanced state of wine making.

The little work of Mr. Bulos is an epitome, presenting a condensed view of practical wine making, and is of the same character with the Man-

ual of Brun Chappuis. I have translated it carefully and annexed it also to this volume. Both deserve the attention of the agricultural community; and if, in following the directions they give, the American farmer shall succeed in domesticating among us the foreign vine, subduing by cultivation the savage character of the native plant, there is reason to believe that an ample reward will await on the experiment.

To the authorities of our country, whether State or Federal, may it not in this age of internal improvement be worth the inquiry, why the different governments of Europe, both absolute and liberal, have so long considered the Vine an object of national protection, and whether the introduction of it amongst ourselves as a staple of agriculture, be not deserving the formal and serious attention of legislative enactment. Europe fears it and I have often heard the sentiment expressed among political economists, that it is incumbent on them to make a change, and to adopt some means to counteract a loss of the American market as an outlet for their wines. Sooner or later they anticipate such a change; and the only surprize among them is, that it has not yet arrived.

Among the vine growing countries of Italy, the grand duchy of Tuscany is unquestionably the most prosperous. Though her government is absolute, a just and forbearing prince sways the sceptre of the Medici, and Tuscany blooms under the civil code of the Leopolds. The chief source of the wealth of this State is in her agriculture. The most productive of her cultivations are, the olive, the silk worm, the vine and the Leghorn

straw. The first of these may be probably cultivated to advantage in Georgia and the Floridas. The silk worm is already in promising favour among us, and little doubt, I believe, is entertained of the ultimate success of this branch of industry. From the Leghorn straw we have less perhaps to hope, as the labour required in the manufacture of the article is too heavy a component, to promise an advantageous result in our sparse population. It is a cultivation moreover which has resisted the efforts of France, and foiled the skill of her judicious agriculturalists. The patrimony of St. Peter has long abandoned the hope of introducing it into the States of the Church, as it is a plant, it would seem, peculiar to the Apennines. But the vine is found through most of the countries of Europe, from the thirty-sixth to the fiftieth degree of latitude, in the various grades and qualities springing from their various climates, soils, exposures, and positions, affording the flattering expectations that the parallel advantages of our own country will eventually produce their similar results, both as to the plant and the vintage.

We have greater reasons to indulge in such hopes than they who have preceded us, as we have the benefit of their skill and experience, their observations and writings. Let us, therefore, at least make the experiment, in the confidence that though gathered into the service at the eleventh hour, the Lord of the vineyard will smile on the work, and crown our efforts with the like rewards, so liberally extended to those who have borne the heat and burden of the day.

# INTRODUCTION

The first part of the book is devoted to a general survey of the history of the subject. It begins with a brief account of the early attempts to explain the phenomena of life, and then proceeds to a more detailed consideration of the various theories which have been advanced from time to time. The second part of the book is devoted to a critical examination of the principal theories, and to an attempt to show which of them is the most satisfactory. The third part of the book is devoted to a consideration of the present state of the subject, and to an attempt to show what progress has been made since the last time the subject was treated in a book of this kind. The fourth part of the book is devoted to a consideration of the future of the subject, and to an attempt to show what progress may be expected in the future.

## INTRODUCTION.

IN the wide range of political economy, there is perhaps no subject exciting so deep an interest as the unexampled prosperity of the United States. The theory of self-government, so obnoxious to the advocates of legitimate rule, seems destined to shake to its centre the established dynasty of Europe, where systems, which for centuries have mingled with every relation between the ruler and the governed, seem fading before a Liberty that at no distant day shall establish her fane on the ruins of the sceptre and the throne.

The experience of fifty years has confirmed in the history of the Republic the predictions of the warmest friends of freedom, which, like the types and shadows of ancient prophecy, year after year unfolds to view; as in the civil and political institutions of the country, we see the happiest accomplishment of the promised blessings.

Religion, the corner stone of the social fabric, unfettered by protecting legislation, dispenses around us the blessings which attend in her train;

and a perfect security of liberty and possessions springs from her just and salutary laws. Whilst the decayed and exhausted monarchies of the old world are plunged in embarrassment and debt—taxing, by every indirection, an industrious and oppressed population, circumscribing their liberties, and drawing from the sweat of their brows the means which minister to the vices of pageantry, it is reserved to these States to exhibit to the world the anomalous spectacle of a treasury embarrassed in its operations from excess of revenue, and a people delving amid the mysteries of finance,—not to devise the ways and means of supplying a deficient income, but to shape their course with the swelling tide of national prosperity, and so to adapt under auspicious circumstances their system of import, as to lessen the requirements of government on the resources of the nation, without a formal surrender of the right inherent to the social compact, to call on the citizen in the hour of emergency, for his just and equitable proportion of the public burdens.

Such is the paradox presented to the world, by the condition of the United States. The intrepid firmness of our ancestors wrested from the iron gripe of oppression the fairest portion of the globe, and the rich inheritance blooms in the delegated administration of constitutional laws.

The onward march of the country to power and distinction is unchecked by foreign broils, and vexatious collisions, and though, as we have seen, the stormy passions inseparable from hu-

manity, may cast a momentary shade on our domestic harmony, it only proves the extent of individual liberty among us, and the wisdom and foresight of those who originated the political machinery with which our Republic is directed.

Prosperity on every side invites to action. Within the last few years the commerce of the country has increased beyond the most sanguine anticipations, and throughout the civilized world there is hardly to be found a haven where the genius of traffic, and the enterprising spirit of our people have not displayed the constellation of the Union. Every quarter of the globe is tributary to our advancement, and the tropics and the zones have swelled with their richest productions, the growing wealth of the land.

Our navy is respected abroad, and the American seaman pursues in the remotest region a hazardous duty, under the protecting shadow of its wing.

Individual prosperity is national wealth, and pours into the coffers of the State, a redundant harvest, through every inlet of commercial enterprise. The genius of the country is the protection of trade. Our geographical position removes us, in a great degree, from the hazards of collision with other nations, and little appears left us, but to improve the advantages, and bring into action the abundant resources, which Providence, as it were in wasteful bounty, has scattered throughout the land. Nor have these been neglected. If we look to the internal improvement of the different sections of the country, it

will be seen that they have proceeded, *pari passu*, with our commercial relations. Railways, canals, turnpikes, and steam navigation, have combined in the great work of developing the resources of the nation, and mountains and floods, where but a few years since, solitude maintained her undisputed sway, have, like the wise men of other days, beheld the star of the east, and roll in their fragrant offerings through a thousand tributary streams.

It is difficult to conceive a contrast more impressive than that presented by the condition of Europe at the present day, as contra-distinguished from that of the United States.

Despotism and absolute rule seem fading in many parts of it before the march of intellect; and the absurd doctrine of the divine right of kings, cowers before the spirit of an enlightened age.

It is impossible, however, that nations should pass from a condition so servile, or shake off the chains with which time and long habit have trammelled, not less the mind, than the body, but by the moral and physical suffering incident to the convulsion.

In every part, therefore, of that continent, we see the people bending under the weight of evils, the concomitants of a strife for freedom; a want of sufficient co-operation to direct and control their patriotic struggle; disunion amongst themselves, the thirst of personal aggrandizement, opposed to settled governments; treasuries to meet the exigency of military preparation, and a systematic league of oppression against liberty;

and the coalition of kings against the inherent rights of the people. The contrast for us is indeed most happy. Happy for our country, that her people are sovereign, and their rulers the delegated agents of the nation, dependent on a public opinion they dare not oppose, and controlled by constitutional restraints they cannot infringe.

The picture of national prosperity would be complete, could we see the agriculturalist participating the general happiness. To the extent we could wish, such is unfortunately not the case. Europe is at peace. Her sword is transformed to the ploughshare. Her camps broken up and her warriors scattered over the face of the earth. The fields of Waterloo, so late the theatre of mortal strife, now make glad with their golden harvest, the heart of the husbandman, and like the vallies of Israel, stand so thick with corn, that they laugh and sing. In this situation the interests of agriculture appeal to our patriotism, and call on us to adopt the remedy which may avert the impending evil, and by a new culture, supply the place of a staple production, which we were wont to exchange for the produce and manufactures of Europe, but for which, in a spirit of improvidence we now send abroad the specie, essential to a sound circulating medium at home, and necessary to support the operative members of our own political household.

A cultivation hitherto neglected or overlooked, invites the attention of the agriculturist, and promises to restore to his operations a recuperative energy which shall succeed the paralysis

that now checks the spirit of that important branch of the community, and repair the waste under which cultivation languishes, in a loss of the European market for her flour and her bread stuffs.

To an attainment of the object we have every variety of soil, and all the different shades of exposure and position. A long line of territory from the twenty-fifth to the forty-eighth degree of north latitude, from Key West to Canada, affords us every vicissitude of temperature and climate, and the belief can hardly be resisted, that by a judicious availing of the manifold advantages within our reach, we shall ultimately succeed perhaps beyond the hope of the most sanguine, in the cultivation of the vine.

I have passed the last five years principally in the vine growing districts of France, Switzerland, and Italy; have been in each during the different stages of the cultivation and the vintage, and from a strong attachment to the subject, have given to the varied progress of the work, from the incipient state of the vineyard, to the operations of the wine press, the faculties of the mind and the feelings of the heart. Under the influence of such motives I have mixed in the labours of the vine grounds, broken with the industrious vigneron of the Cantons his oaten loaf, and accepted his freely offered wine cup, and in the interchange of courtesy and kindness, melted the frost which separated the European peasant from his fellow man, which unlike the liberal habit of our country, confines each profession within its peculiar orbit.

The theory of the vineyard, and many of the important principles of it, may be gathered from books and the intelligent proprietor; but the practical details of the cultivation must be sought from another source.

To arrive at these we must drink at the fountain, and, with proper feelings, 'tis of easy access.

There is, perhaps, no being of a more kindly nature than the poor vigneron of Switzerland. I never approached the vine grounds of the poorest without meeting the smile of welcome. To manifest an interest in the subject by which he is wholly absorbed, creates at once a point of meeting, and calls up his warmest feelings. The vineyard is his home; and though small as is the space he occupies among his fellow men, there his empire is undisputed, and he presides over his little domain with a sovereign's sway. Even his proprietor seldom interferes with his operations, but, in a spirit of confiding security, commits his interest to his industry and skill.

To inquire, therefore, into the mysteries of the cultivation to which his life is devoted, is to flatter his pride, and gratify his self-love—placing him at once on a favourable ground towards him he addresses. He feels the superior, imparting instruction to an attendant pupil, and in a spirit of self-satisfaction, opens to him the store house of his knowledge, not unfrequently the rich accumulation of half a century's practical experience.

In no part of Europe of which I have the least knowledge, is there a crop, which, in pecuniary

profit, will compare with the cultivation of the vine. Commerce in France is an auxiliary, rather than a principal of fiscal resource. Agriculture and manufactures are the leading objects of national protection, and the cultivation of the vine is the main artery through which the agriculture of France conveys her tribute to the national exchequer.

The heavy imposts levied on the vine proprietor by the late, as well as actual government of France, as a direct assessment in the first instance on the vine grounds, and subsequently in the various ramifications of the trade, from the wholesale purchaser at the wine press, to the vendor of the single flask to the consumer, proves how heavily the hand of power presses on this branch of French agriculture, and the productive returns of the crop that can sustain without sinking under the unrighteous exactions.

Though France may justly claim to be among the finest of the European States, much of her soil is barren to the last degree, and it is in such soil, so unfavourable to the cultivation of grain, that the vine is found a flourishing staple of the country. Such, for example, is the case with Burgundy, one of her celebrated wine making districts, when we find the soil in the neighbourhood of Dijon, her capital, a loose gravel that will scarcely produce a crop of grain, sufficient even in that country, where labour does not exceed the half of our prices, and wheat is double the value of that article in Pennsylvania, to defray the cost of producing, without any calculation of interest on the capital invested in the land.

Yet there, as is well known, the barrens around the city produce their wines, which though exceeded by many other wine grounds in quantity, are rarely equalled, it will be admitted, in quality, by the lover of Burgundy.

It is the misfortune of the cultivator of Burgundy that his wines deteriorate by transportation, and lose the exquisite flavour for which at at Dijon they are so deservedly famed. To be enjoyed in perfection, they should be drunk at the birth place. They are held as inferior, even at Paris, to the wines of the department.

A deep interest in the cultivation and wine making took me to Dijon during the vintage of 1826, and a similar feeling induced me to visit that capital in the spring of 1827, and autumn of 1829, and of that of 1832, and I should violate the grateful sense I feel, of the reception accorded to an entire stranger, if I did not here acknowledge the patient politeness with which they replied to my inquiries at the vineyard, and the characteristic urbanity which admitted me without reserve to the operations of the wine press. I passed an entire vintage at the press of an affluent proprietor at Dijon. He was an intelligent man, and had devoted years of observation to the improvement of his vine grounds. Cultivation was his idol, and to preserve the high fame abroad, which an unwearied industry had secured to his wines at home; the acme of an ambition to which his ceaseless efforts were directed.

He had, a few years before, pressed from selected grapes, a quarter cask for a friend at New Orleans, on which it appeared he had bestowed

unusual care. The fruit was all carefully examined. Every bunch ascertained to be ripe, and in the proper state for the press. The grapes were all detached from the stems, which, together with the small and imperfect fruit, were rejected. The process of fermentation, so delicate a feature in the arcana of wine making, was conducted under his immediate observation, and when finished, the wine was, at proper intervals, several times transvased, to purify it from extraneous matter. In this state it was put up for exportation. The quarter cask carefully closed, was placed in the middle of a hogshead, and secured in its central position by iron stanchions; when thus secured, the hogshead was filled with brandy.

The wine, hermitically sealed from the action of the air, was sent by land to Marseilles, whence it was shipped to New Orleans, where, on arrival, it was so changed, that the purchaser, for whom it had been so carefully prepared, and who was at Dijon at the vintage, could not recognise it as the same wine. The vintner who directed the operation, had been sanguine as to the result of his theory, and was chagrined at the failure of the experiment. His proprietor believed it the effect of agitation, and not ascribable to the voyage by sea, or the climate of Louisiana; but he admits that his opinion was mere hypothesis.

Both the white and the black grape are extensively cultivated at Burgundy, though the cultivation of the latter predominates. There is a strong resemblance in the black grape of that district to the small chicken grape (*vitis sylvestris*) of our own country. The difference between

them is chiefly in the size of the berry and the flavour of the fruit, as the grape of Burgundy possesses an agreeable sweetness, which if suffered to wilt a little on the vine, deprives it of the acid character, and renders it palatable as a desert for the table. The appearance of the different fruits is so much the same, that it is easy to believe the superiority of that of Burgundy, over the little indigenous grape of Pennsylvania, may not be beyond the effect of cultivation, judicious pruning, a soil congenial to its habits, and the favourable inclination of the ground, on which in that country the vine is generally found. The acidity belonging to our native grape will be so changed by cultivation that we may reasonably expect from it a fair wine, as it is perfectly understood by the European cultivator, that the fruit most highly esteemed for the table, affords in general an inferior wine, and is seldom cultivated for that object.

The mode of vine growing in general use in Burgundy, appears objectionable on some points, and is considered so, I believe, by many practical cultivators of that country, who, nevertheless continue to tread in the footsteps of their ancestors, as the result perhaps of long habit, and influenced, it may be, by present pecuniary circumstances.

A century has elapsed since the establishment of many of their present vinegrounds, and during that time the vineyard has assumed a different aspect, as new lights have opened on the cultivator. The late plantations bear the evidence of an improvement in the cultivation, but to avail of these

the proprietor of the ancient vineyard must of necessity break up his vine grounds, and eradicate his plants, commencing *de novo*, a cultivation costing an immediate heavy outlay, and the sacrifice of eight or ten years of present productive revenue. Such considerations check the spirit of improvement, and tend strongly to affix on Burgundy the appearance of a slothful and negligent agriculture, foreign to the character of the department, an impression which will probably continue, as the vine has been so long established in the country, and may be said to be immortal, the life of the plant, under judicious management, being interminable.

On a superficial view of the vine grounds, it appears that their cultivation has for its object, the quantity rather than the quality of the product, as in most of the plantations of forty or fifty years growth, and of such, much of that wine district is composed, the vines are crowded together in such a confused mass, as to neutralize the advantages derived from a judicious exposure, so favourably conducive to a ripening of the fruit. To this disadvantage may be added, the actual injury inflicted on the young and tender branches, during the periods of weeding, an operation necessary three or four times in the season, as belonging to the system of vine dressing, and forming a feature of thrifty agriculture, not to be disregarded by the prudent vine grower, who performs at the same time the twofold operation of ridding his plants of a superfluous vegetation, and collecting the bountiful tribute which the luxuriant growth of the vine returns to the com-

post of the barn yard. The general cultivation of the vine in northern France appears the same. When such a situation can be commanded, the vineyard occupies the inclination of a hill. From such selection, two advantages are derived. An increased degree of temperature from the reflected heat of the declining aspect, and a correspondent dryness from the openness of the soil, and precipitous descent of the position; desiderata contributing greatly to the prosperity, and, in some countries, essential to the existence of the vine. Though important, certainly, to the results of vine growing, I do not consider such a position as indispensable to the cultivation in Pennsylvania. The climate of the State affords a temperature favourable to a production of the delicate wines of France. The latter is a consequence of the evaporation from our summer sun, by which we may reasonably expect sufficient dryness, when the soil be not argillaceous, and the position afford the necessary descent to carry off the heavy rains as they fall. The flank of the hill may be esteemed then in general as the favourable position for the vine ground; but that it is not exclusively so, and that good wines, nay *fine* wines, are derived from the vineyard of the plain, can be demonstrated by many instances in the history of French cultivation. The district, for example, of Medoc, department of the Gironde, is a plain, and we know that there are found the vineyards of Lafitte, Chateau, Margaux, Leoville, La Rose, and Branc Mouton, the excellence of whose productions are as well known in our country as in France.

The wines of St. Denis, and of Shadillon, in the department of Loiret, are also from the plain; so are the best wines of Orleans. The like position in the department of Sonne, through which I have frequently observed the cultivation, as well as on the banks of the Rhone, afford also superior wines; and we may further observe that the wines of Languedoc are from the vineyards of the plain. In my intercourse with the European vine dressers, I have often been struck with the capricious nature of the vine, and the utter impossibility of a knowledge, *a priori*, of the results of a new cultivation. Neither the French nor the Swiss vigneron, have the least confidence in their foresight as to the results of a new plantation, and anxiously await till the first vintage, and first wine making, shall determine the character of the young vineyard.

One of the strongest illustrations of this fact is related by Mr. Thicabout, a distinguished French agriculturalist. He says, that in the little vineyard of Mont Racht, in the department of the *Coté d'or*, there are three distinct and separate divisions and qualities of the wine from the same species of the vine—the same plant—a result of which the proprietor, at the time of planting, had not the least idea or anticipation. He describes the position, soil, and exposure of the entire vineyard to be to all appearance precisely the same, but yet the quality of the wines so different, that they are well known through France, and sold at different rates, according to their different character and reputation. This little vineyard, originally intended as one plantation, is staked

off and partitioned into three divisions. The first of these is called the *Canton de l'Ainé*; the second, the *Canton Chevalier*; the third, *Canton Batard*.

The wines of these divisions, though all submitted to the same cultivation and making, are essentially different; nor does it appear within the scope of agricultural skill to fathom the mystery, or assign any tenable hypothesis for the erratic deviation.

The vine is the staple of the country from Dijon to Lyons, and, with few exceptions, the cultivation is similar, and the appearance of the vine grounds the same. The rows of the vineyard are about two feet asunder, and the plants cut down to the height of four feet, supported in some cases by two upright props placed on each side, at the distance of a foot from the vine. In most of the plantations, however, there is but one prop to each; arising probably from motives of economy where, from the scarcity of timber, the expense is by no means to be disregarded. It is the general practice in Switzerland to take up these stalks in the autumn immediately after the vintage. They are usually kept in the barn, or some dry building, protected from the snows and rains of winter, and though the labour of so doing, and that of replacing them in the ensuing spring, would probably prevent with us such a measure, it is in that country considered that the preservation of them thereby gained for three or four years longer fully indemnifies the vigneron for the labour of the operation.

As I have not, in France, been farther south

than Lyons, I cannot from personal observation speak of the vine districts of that quarter, celebrated as they are for the superiority of their productions. It is but seldom that the best wines of France are to be met with in the United States; though I have been told that one of the fine vineyards of the south has been leased for ten years by a commercial house in New York. The vintage of their prime grounds is in general forestalled by the agents of English commercial houses, who pay for it, good or otherwise, as the case may prove, an exorbitant price, supplying at a correspondent rate the wine loving portion of the British community, from the presses of Chateau, Margaux, Cote Rotie, or Lafitte.

There is a small town in France, at the foot of the Jura, called Poligny, but a small distance from the Swiss frontier. A wine esteemed for the delicacy of its flavour is produced there; but such is the extreme sensibility of the wines of Poligny, that they do not bear a transportation, consequently are but little known, except to the traveller in the neighbourhood. The best production of that district is the *Vin de l'Etoile*, a delicate light wine, of exquisite flavour, approaching more nearly in character to a fine champagne, as I thought, than to any other wine of France. It is cultivated on the side of the Jura, on a stony barren, and on the plain extending about a hundred yards from the foot of the mountain, the soil of which is a mixture of stone and gravel. Both these positions are famed for the excellence of their wines, possessing, however, a marked dissimilarity of character. They are white and

red, and it is generally conceded that the mountain production is the superior wine. Whenever these wines are sent out of the district which produces them, they are, of necessity, so highly reinforced, as to destroy, in a great degree, the delicacy of their flavour, and change their original character. No correct idea can, under these circumstances, be formed of the primitive wine. Both are highly esteemed at Poligny, and cost there a high price.

There can hardly be a greater dissimilarity than that existing between the wines of Poligny and of Switzerland, distant but a day's journey on the southern side of the Jura. The wines of the Canton of Geneva are, in general, light, weak, and of little flavour; and if we except those from the coast, taking, from their position on the shores of the lake, the name of *Vin de la Cote*, are for the most part difficult of long conservation, becoming hard and sour when but three years old. The district producing the *Vin de la Cote*, stretches along the shore of the lake Lemman, near the town of Nyon, and that which gives to this wine the character it bears, of superiority among Swiss wines, is not an intrinsic excellence, but because it is better than the other Swiss wines of the neighbourhood, which, by any one unaccustomed to the hard and sour wines of that Canton, would be pronounced as inferior, and, in any other country, not worth the labour of producing them. From these remarks as to the lake wines, may be excepted the wines of Neufchatel, in the Canton of that name; and those of Vevey,

in the Canton of Vaud, on the distant extremity of the lake of Geneva.

In a favourable season, both these wines, though essentially different in character, are good; but yet I believe few of the Swiss proprietors profess that their quality is equal to the wines of Malaga, which, with us, unquestionably rank as *médiocre* productions of the vine.

The proportion of red wines made in the Canton of Geneva is small. The white grape prospers more generally in their unequal climate. Both, however, are of a quality so inferior, that the slender resources of that beautiful country can alone account for the cultivation of the vine, to the extent to which it exists among them.

In the family of the Swiss peasant, wine is essential, and supercedes the use of tea, coffee, or other stimulating beverage. Inferior, therefore, in quality as their wines unquestionably are, they are sold at a price, giving in many parts of the country a value to the lands, which, but for the vine, would be a waste, unfit for cultivation.

It is the absence of foreign commerce, producing a system of exchange betwixt neighbouring nations, which alone may explain why the Swiss do not import the fine wines of France on one side of their country, and of Italy on their southern border, in preference to drinking the meagre productions of their own vine grounds. Their country produces nothing to give in exchange, and they have not in general the means to pay for them. But they have in a great degree the virtue of contentment; and if they do not offer to the stranger as good wines as their

neighbours, they give him the best of their own production, give it with a kindness far exceeding their limited resources, and commensurate only with the warmth of their feelings, and the frank and open-hearted character of their national hospitality.

Adjoining the Canton of Geneva is the Canton of Vaud, one of the most extensive of the vine growing districts of Switzerland, supplying their neighbours of Berne, Fribourg, and the Grisons, with their inferior wines, considered by them as a necessary of life, and which in general would hardly be esteemed equal to the good cider of our country.

It is doubtful if, indeed, it would command in the markets of Philadelphia and New York, where superior foreign wines are abundant, as good a price, unless purchased for the purposes of adulteration, by the American brewer of wines.

Among the vines of the Canton of Vaud, the best may be considered as that of *La Vaux*, near Vevey, and the *Vin d'Yverne*. It is probably in the district of La Vaux, between Lausanne and Vevey, that the vine lands of that country have attained the maximum of their value. So profitable in the agriculture of the Cantons is the vine, that in the capricious inconstancy of his climate, the Swiss Vigneron considers himself indemnified for his excessive labour, by one good crop in five years. This, to be sure, is an unfavorable calculation, but 'tis by no means unusual for three successive years together to intervene between what they consider as their fa-

vourable seasons of wine making. Before I had been a month in the country, I was accidentally apprized of this fact. Mr. Correvon, the Syndic of Yverdon, whose urbanity of manner and frank hospitality, have made him favorably known to most strangers visiting that ancient city, and whose active and efficient participation as a member of the "*Grand Conseil*," has distinguished him in the political economy of the confederation, is among the intelligent and successful cultivators of the Canton of Vaud. An amateur, curious in the process of wine making, his cellars contain a collection of wines, the productions of his own vine grounds at La Vaux, the most *recherché*, and surpassed in quality by that of no other proprietor of that Canton.

In showing me his wines, I was impressed by inference with the belief, that the climate of Switzerland, or at least that of Vaud, does not afford in a given time, more than one-third of the seasons which are favourable to the wine making.

The first he offered me as of a superior vintage, was that of the year 1791; then, 1795; then, 1801; then, 1805; and so on, up to 1826; and I found that the intervention of time between the seasons which had given a character to the vintage, was seldom less, and frequently exceeded three years. Yet, under all the multiform disadvantages, the Swiss Vigneron finds a better return for his labour, and the land holder a better interest for his capital, than in the cultivation of grain, even though the price of labour seldom exceeds twenty four cents per day; and the *quartron* of

wheat, the Vaudois grain measure, now commands in the market of Yverdon (April 1832) about ninety cents of our money.

The *quartron* of that Canton appeared to me about one-third of the bushel of Pennsylvania, making the wheat of Vaud equal to two dollars and seventy-five cents per bushel. Other objections combine, which, if fairly considered, operate against the Swiss vine dresser, and incline the balance toward the side of American cultivation. The unfavourable influence of the climate of Switzerland, from the proximity of the Jura, the line of separation between France and that country on the one side, and the chain of Alps, with their eternal snows, which skirt the southern boundary on the side of Savoy, expose the cultivator of Vaud to the various injuries sustained from the late frosts, which frequently nip the blossom of the vine, and the equally dreaded destruction of the young fruit, from the violent hail storms of the months of July and August, by which, in many cases, the whole crop is totally destroyed. I have more than once seen this mischief inflicted on the vineyard, and heard the poor Vignerons of the Cantons lament the reverse to which a capricious climate so peculiarly exposes his profession.

The district of Granson, on the lake of Neuchâtel, but half a league distant from Yverdon, is a vine growing country, and on either side of the ancient chateau, whose lofty turrets and stern defences still exist, the rude memorial of their iron age, the peaceful labours of the vine dresser are in unhappy contrast with those "by gone

days," when the feudal barons of Granson swayed an arbitrary rule over the tributary dependants of the Fief, and levied their unrighteous exactions on the defenceless trader, who visited, in the prosecution of his craft, their limited domains.

Luxuriant vineyards crown the heights where the gallant countrymen of Tell opposed the daring inroads of Charles, and sheltered by their mountain fastnesses, overthrew, with a handful of determined men, the disciplined legions of Burgundy's powerful Duke.

The interest of the story is deepened by the popular tale of "Anne of Gierstein." Granson is classic ground from the pen of the master spirit who has so happily interwoven her fictions and her facts, and spun from them a web, which rivals in grace the fairy woof of Arachné.

• But such scenes are passed at Granson, where now the patient Vigneron pursues his daily round, heedless of the dream of fancy which recalls to life the chivalry that time has quenched, or martial deeds consigned to oblivion by the magician's wand. The dull realities of life excite his active energies; and his physical powers are taxed to repair the ravages of the tempest. I have known on these hills, the entire product of extensive vine grounds, bounding beneath the promises of exuberant vintage, totally annihilated by a sudden hail storm, of half an hour's duration, sweeping, with destructive fury, the line over which it passed, and which did not, perhaps, exceed the breadth of half a mile, leaving the country on either side of its path entirely

free from the calamitous desolation. The unsparing element levelled in its passage the sheds and corn ricks of the barn yard, uprooted the majestic oak which for centuries had opposed its fury, and prostrated a long line of vineyards with their ripening clusters, leaving the poor Vigneron to mourn over the sad mutation which a single hour had shed on his promised fortunes.

It is fortunate for the Swiss cultivator, that such visitations are practical in their mischievous effects; the governments of the Canton of Vaud, and I believe of some of the other vine growing Cantons, have established a system of insurance, from which the prudent proprietor seeks indemnity from the losses arising from this danger, the premiums paid being fully equal to the partial damage sustained. It is the poor Vigneron who is in general the sufferer; as from the want of a prudent thrift, or an inability to afford the required premium, he assumes himself the risk, and frequently neglects to insure against it. The danger from this source, it is true, is diminished by the custom prevailing in that Canton, of erecting in different quarters of the vineyard, metallic conductors supported by high poles, which tend to discharge of the electric fluid the clouds overhanging the vineyard, and so raising the temperature of the atmosphere, as to liquify the hail before it reaches the surface of the earth.

Without such protection from the vicissitudes of climate, afforded to the proprietor by the insurance of government, the vine could not exist in the Canton of Vaud to the extent to which it is cultivated. From such obligations we are

happily exempt, by a genial climate, as the lateness of the season at which with us the vine unfolds its blossom to the vernal sun, is a guarantee from the first; the latter being of such rare occurrence among us as scarcely deserving to be considered among the objections to the cultivation.

Now, apart from these sources of drawback, the Swiss vine dresser considers his crop a minimum, when the *Pose* of land produces but three *chars* of wine, and the vintage of *La Vaux* has been known in a favourable season to yield to the proprietor the surprising return of eight *chars* of pure wine to the *Pose*.

This, to be sure, is an extraordinary product, occurring probably but once in seven or eight seasons. Let us suppose, however, in the estimate, a calculation justified, I think, by the facts as they exist, and assume as the medium that the *Pose* of land produced an average of five *chars* of wine.

The land measure of the Canton de Vaud is decimal, the foot being ten inches, and the *Pose Vaudois* forty thousand square feet. By a reduction of the foot Vaudoise to the measure of Pennsylvania, it results that the *Pose* of that Canton contains 33,333 and a fraction square feet of land, our measure. The *char* of Vaud, like the pound sterling of England, is imaginary, containing four hundred *Pots*, the *Pot* of the Canton being about equal to two bottles, as the wine bottle is rated in America.

On this estimate, therefore, it appears that the cultivator of that Canton derives from his vine-

yard, an annual average of four thousand bottles of wine to the *Pose* of land. The price at which this wine is taxed by the municipality of each *commune*, varies with the concurrent circumstances, and is such as has but little influence, in general, on the actual sales of the vintage. The object of the official tariff, is to establish between the vigneron and the proprietor the price to be paid as the compensation of the services of the former, who though labouring in the vineyard for a stipulated proportion of the vintage, is paid in money the amount of his dues from the land holder, who, by the municipal law, is compelled to take on himself, the trouble and risque of disposing of the wines. This is a measure absolutely necessary, from the poverty and improvidence of that class of the community, constituting the larger portion of the vignerons of that country. Generally, during the summer, they draw, from time to time, from the proprietor, as much for their daily support as amounts to their full proportion of the vintage. I have known in the Canton of Vaud, as a consequence of three successive unpropitious seasons, the poor vigneron deeply embarrassed by the necessary advances made by his proprietor, and which in an unproductive vintage has greatly exceeded the amount of his proportion, as affixed by the municipal tariff. Such misfortune, occurring for two or three successive seasons, accumulate on the vine dresser a long list of arrears, involving him in difficulties from which a long life of toil and self-denial can hardly extricate him.

But in that country, property does not ex-

change masters as with us, and the inheritance of a good vineyard is considered the best possession which a prudent father can transmit to his children. Equally stable is the profession of the vinedresser, who generally toils his life time in the grounds cultivated by his fathers before him ; and educates his son to the same walk of life, from which he rarely dreams of departing. In such circumstances an unfortunate vigneron is sure to experience the sympathy of his proprietor. They have passed the days of their childhood together, and an association of juvenile recollections establishes the happiest feelings between them. It is a rare occurrence to find a Swiss proprietor pressing with undue rigor his unfortunate vigneron. This is a feature of their system of agriculture which will not bear on the cultivation in America, as no such class of operatives exists among us. The vine will be in the hands of the owner of the soil, and prosper only under his personal care.

Though the municipal tariff is general, it is not in force throughout the whole of the Canton of Vaud. The wines, for example, of La Vaux are too valuable to be the subject of such interference, and the proprietor of that district usually employs his vigneron at a stipulated pecuniary price. The tariff of the neighbouring communes has, nevertheless, an important influence on the profits of his vintage, as in a season when the product of the vine is abundant, the wines of La Vaux, though superior in quality, command, when new, a price not generally exceeding fifty per cent. beyond that of the best

productions of the adjoining districts. This advance, however, is considered sufficient to exempt them from municipal interference.

The wines of the communes of Orbe, Valeyres, and Montcherand, were, by the tariff of 1831, assessed at four batz\* the *Pot*. If we assume as the value of the vintage of La Vaux for that year, the rate of six batz the *Pot*, at which price, however, I have no idea it could have been bought of the proprietor, it will result that the *Pose* of that district produced to the cultivator the sum of three hundred and sixty dollars, our money. This calculation is made on the assumption that the *Pose* produced an average of two thousand *Pots* of wine, which I believe was fully within the product of the vintage of that year.

To arrive at the net amount which a similar cultivation would with us return to the vine dresser, the expense must of course be deducted; and this is a problem, the solving of which falls necessarily within the purview of the practical agriculturalist, acquainted with the results of labour in Pennsylvania. If in the estimate there be error, I incline to the belief that it will not be found against the American cultivation. The amount of duty in our country, paid by the consumer of foreign wines; the expenses of transportation abroad to the port of shipment; the charges of freight, insurance, commission of factors, with the various items which swell the cost of the foreign article by the time it reaches our market, operate as a bounty on the domestic

\* The batz is equal in value to three cents, our money.

cultivation, and if fairly set against the low rate of foreign labour, will tend, I think, to equalize us with the European vine grower. If to such considerations be superadded the cost of an acre of land in the vine districts of Europe, as compared with the value of the same ground from which in the United States we may reasonably expect success, it seems hardly possible to doubt the issue of the experiment, or to close one's eyes against the tide of advantages to flow from the successful attainment of such an auxiliary to our suffering agriculture.

In reflecting on the cultivation of Switzerland, where in an unequal climate it often occurs for several successive seasons, that a temperature of seventy degrees of Fahrenheit, does not continue for more than three or four weeks of their precarious summer, during the greater part of which they have an obscured or overcast sky, we must be strongly impressed with the favourable difference afforded by our climate, to a cultivation, the success of which so much depends on a temperature of seventy-five or eighty degrees, for at least a fair portion of the summer, and a continuation of sunshine for three or four months of the season. The point, I remarked, of difference in their favour, and 'tis certainly of great importance, is, that the month of September in the Cantons is usually dry, having in general a clear unclouded sky, and but little rain. Heavy fogs prevail in many districts of the country, but it is generally conceded that the ripening of the fruit is promoted rather than retarded by that circumstance, the influence of the sun usually

dispersing the mist, which at meridian is succeeded by a warm, invigorating sunshine, continuing through the day at a temperature of 65 or 70 degrees. Our month of September is in general the reverse of this, and the rains which characterize with us the autumnal equinox, may be deprecated as the greatest difficulty opposed to the cultivation. It is at this moment of its progress towards maturity, that the grape requires an arid soil, and dry atmosphere, and nothing, perhaps, in every stage of the cultivation, exercises so strong an influence on its ultimate success, as the absence of heavy or continuous rains at this critical moment. The deleterious effects of such rains are dangerous to the prosperity of the wine making, whilst on the contrary the mild and softening dews of the nightfall, and the gentle evaporations of a neighbouring river or lake, impart to the grape a life giving vigour, equally salutary in its influence on the quality and abundance of the harvest.

The injurious effects of our September rains, though pernicious to the European vine, not fully acclimated, may be less dangerous to the native grape, the hardy constitution of which, will resist the damps of our autumnal season, affecting so unfavourably the stranger plant. Yet I cannot withstand the belief, that notwithstanding this feature of our September, we possess a climate more auspicious than that of Switzerland, and that in adopting the cultivation which has been so eminently successful in the Cantons, we shall arrive at the same result, and acclimate in our country, the foreign vine. "Necessity,"

says the adage, "is the mother of invention;" and to this stern parent is the vigneron of the Cantons indebted for the series of experiments which has established on his hills those delicate vines, that require but little comparative labour in the more genial climate of the neighbouring states.

The process by which the vigneron of Switzerland, acclimates to his country the southern vine, draws heavily on the patience of the cultivator, and taxes his industry for a period of eight or ten years. It is unknown to the cultivator of France or Italy, because neither France nor Italy requires the adoption of it. It is the peculiar cultivation of Swiss industry, and I shall speak of it at large in its proper place.

It cannot be denied that much labour is given in the Cantons to the cultivation of the vine, and this fact is urged as objectionable with us against the system of vine growing.

A little reflection on the comparative situation of the two countries, and the mode of culture growing necessarily out of the peculiar situation of each, may be sufficient, I think, to satisfy those whose honest doubts are opposed to the measure. The high rate of labour, is constantly urged as objectionable with us against the introduction of the vine.

I readily admit the extravagant price of labour among us. It is greater, perhaps, than in any other settled country. But while the disproportion of labour in the United States and many parts of Europe, is as three to one against us, an equal if not greater disparity in our favour is

to be found in the price of wine. On this point, however, important as it is to the question, I lay no stress. We live in an age when mind is successfully opposed to matter, and a country where thews and sinews are supplanted by the powers of labour-saving machinery. It is on the different mode, therefore, of applying the remedy, as suited to the sparse population of our country, that we must rely to overcome the objection.

In many parts of the wine countries of Europe, (and it is peculiarly so in Switzerland) a dense population is crowded into such narrow limits, that the agriculture of the country but barely affords them the plainest necessities of life. The price of grain, corresponding with the demand for it, is high; and as a consequence, the labour of man is cheaper than the labour of beast.

As it is a settled principle of agricultural tactics with the Swiss farmer, to keep no animals not necessary to the business of his farm, resource is had to every means to avoid the support of such expensive members of the agricultural family. Nor in fact is it necessary. The revolutions of the country have broken up the ancient feudal tenures, and divided the lands of the great seigniories among the people. In a country where no right of primogeniture exists, and where an equal division of property of the parent among his children, forms, as with us, the basis of hereditary descent, the natural sub-division of property supersedes the necessity of an agrarian law. The possessor, therefore, of twenty acres, is an important member of the commune of which he is the bourgeois, and courtesy not unfrequently

assigns to him the appellation of his domiciliary village. Few among them are so rich, as to possess great estates in land; and there are but few families having prudence and industry, that do not own an acre of ground. In this situation of the country, much of the farm work is by the hand.

Except their mountains, the Swiss have but little pasture grounds. The cattle are driven into the Jura in May, and returned thence in October, when from heavy frosts they can no longer be sustained by the herbage of the mountain. The value of the vine ground is such, that they have crowded on to the acre more plants than should be given to it, a mistaken economy, which is yielding progressively to the experience of time, as it is found in such plantations, that from a dense foliage the rays of the sun are so shut out, that they do not derive the full advantage to be attained from a more judicious planting. It is easily perceived when such is the case, that all tillage and weeding must of necessity be the work of the hand. This is generally performed by the women and children, as being the lighter part of the labour, though the men also, at times of less pressing requirement, are to be seen in the vine grounds in the seasons of weeding. The profession of vine dressing in Switzerland, forms a distinct and separate branch of agriculture; and I have seldom observed the vigneron mixing in the ordinary business of the farm, nor, in fact, has he time at command for such employ. The regular system of labour required in a well ordered vineyard, affords but

little interval of abstraction from the main business of his occupation, as each day brings with it a peculiar duty, and the Swiss vine dresser, from the commencement to the termination of the season, is pressed by the business which a rapid vegetation accumulates on his hands.

Proprietors in the Canton de Vaud give usually to an experienced vine dresser, a moiety of the vintage, as the remuneration of his labour. At the season of wine making, the proprietor, as I have before mentioned, is obliged by law to take the whole of the wine made, and in money pay to the vigneron the amount of his portion of the crop. No misunderstanding on this subject takes place, as the law of the municipality establishes the value of the wine measure, and from the municipal tariff there is no appeal. The valuation thus decided is affected by several circumstances, as the stock of wines remaining on hand from a previous vintage, the quality and quantity of wine made, the demand from a neighbouring encampment of troops, and the spirit of speculation among the capitalists, many of whom, from want of confidence, have withdrawn of late from the public debt of the neighbouring States, and who, in a country so barren of resource, seek out such an investment of their unemployed funds.

It is the duty of the municipal convention of the different communes to ascertain the several causes which thus exercise an influence on the value of the vintage, and when known they are called together, usually in the month of January, to fix by their official the value of the wine measure of the preceding crop. I passed in Switzer-

land some time at the chateau de Montcherand, the vigneron of which cultivated five acres of inferior vine land, half the produce of this was his whole support though he had a family.

It will not, I presume, be supposed that a vine dresser in any of the good vine districts of France, the neighbourhood, for example, of Bordeaux, receives a moiety of the crop as a remuneration of his labour in the vineyard. The wines of that country are in great demand for European consumption, and are sold at an extravagant price. The vigneron of those districts is employed at a stipulated consideration. Government in France mixes with the business of the wine making, and appoints in the different departments, the day on which the work shall be commenced, and the duration also of the operations of the wine press. It must all be performed within the given time, as, for example, three or more certain days. In France, where they have no fences, and where frequently the only mark of demarcation between neighbouring vineyards is a small footpath, of the width about eighteen inches, the protecting influence of such a measure, is one of the reasons assigned for the adoption of it, as on those certain days (and on no other) the grapes are all gathered.

Every proprietor is in the field, and takes care that his neighbour respects the line of partition.

The spirit of freedom existing among us, and which causes us to revolt at the interference of authority with our pecuniary or personal concerns, will always prevent such a controlling regulation. But it is the theory of many of the

governments of Europe, so to shackle and impede the free operations of the people, as to induce a belief that they are incapable of protecting their interests, and like infants who have not cast aside the swaddling clothes of dependence, require the salutary restraints of discipline and guardianship. This is even the case in republican Switzerland, where in many of the towns of the Canton of Vaud, the farmer does not open his sack of grain to expose it for sale until a certain hour at which the municipality have decided he shall be at liberty to treat with the purchaser. He must also close it at another fixed hour, after which no public sales of grain, or other produce, can be made in the market place on that day.

Such regulations do not, however, affect his private transactions, as beyond the jurisdiction of the municipality of a market town, he may act at pleasure in the disposal of his produce. We adopt the wiser course, which leaves every one free to direct his business as he may deem most conducive to his interest. Commerce, like the flowing stream, always finds its level, and prospers most when least fettered by the hand of protective legislation.

The interference of France in the affairs of the vintage, may be ascribed in part to her system of finance; as the amount in which the proprietor of the French vineyard is annually mulcted, forms no inconsiderable item in the revenues of the public exchequer. To retard the period till the grapes are fully ripe and fit for the press, is one of the professed objects of the interdict, as though the cultivator of the vine could not as

well discriminate in his operations, as the grower of a field of corn, on whom no such restriction is imposed. The period of the gathering varies, of course, with the season and situation, allowing thereby the vine dresser of the south, where the vintage is generally fifteen or twenty days earlier in the season, to migrate northwardly, to aid in the gathering of the late districts. The government of France has a property to sustain abroad in the character of her wines, and the measure may resemble the law of Pennsylvania, which prohibits the exportation of the flour of the State, previously to an inspection as to its quality. This regulation prevails in Switzerland, and produces, it appears to me, all the inconvenience arising from the measure in France, without the redeeming point which mitigates in some degree the odium of the French law. Switzerland has but little, if any, export for her wines, and the law which compels the proprietor to gather his crop within a specific or given period, greatly increases the expense of the vintage, as well as that of the wine making establishment.

I passed the summer, and vintage of 1831, among the vine covered hills of Valeyres, in the Canton of Vaud. My adjoining neighbour, Mr. Charles de Bonstetten, son of the celebrated author of Geneva, is among the most intelligent and successful cultivators of the Canton of Vaud. To accomplish the work of his vintage, he is obliged from the circumstance of being thus limited by the municipal restriction, to employ seven presses to perform the work of fifty acres.

These presses are beautiful specimens of mechanical power, and cost in that country one hundred and fifty dollars each. The whole business of his wine grounds could easily be effected by two presses, perhaps by a single one, where, by a change of workmen, the pressing is continued day and night, if he were allowed to gather his fruit at discretion ; for in 1831, three weeks of fine weather succeeded the termination of the time fixed by the municipal law for the gathering of the crop, during which time the grapes would have improved if they had been permitted to remain on the vine.

The seasons in that country, it is true, are capricious, and no reliance can be had, that the fruit, after the coming in of October, would be safe in the field for any length of time. We, however, consider that the determination of such matters is the exclusive right of the cultivator, whose labour has been given to the production of his crop, and whose interest in its management and preservation is a stronger guarantee than rulers and laws can impose.

But it should be remarked, that this restriction may be evaded in the Canton de Vaud, by the proprietor who chooses to do so, by enclosing his entire vineyard within a stone wall. But, though the Canton is alive with population, and materials are scattered in great abundance, over the surface of the whole country, labour is not so cheap there as is the case generally through continental Europe ; and the proprietor who encloses his grounds by a wall of circumvallation,

is never perhaps fully indemnified for the precautionary measure.

The municipal regulation though not *de jure*, is *de facto* imperative, and produces all the inconvenience of a positive law.

I am of opinion that in Pennsylvania, where the season is so warm as to allow the gathering of the fruit during the entire period of a month, that one good press would be sufficient to perform the work of a vineyard of fifty acres. Such too would be the case in France, if the proprietor were not required to gather his fruit within the time specified by the law; and the fruit being thus gathered must immediately be subjected to the operations of the press, or the whole would be lost.

A dry soil and climate are both favourable to the prosperity of the vine. This fact is so well understood by the Swiss vigneron, that every advantage within his reach is availed to the attainment of these desiderata. I have known in the Canton de Vaud, in vine grounds occupying the side of a mountain, the soil of which was a mixture of stone and gravel, where, from the precipitous position, the descent was rapid, and the soil so loose, that it might fairly be supposed that the least moisture from springs or rain would not remain an hour. Deep trenches, or artificial drains, crossing in oblique angles at intersection of about fifty feet, the whole area of a hundred acres. The subterraneous conduits were about three feet square, the superior surface being probably four feet below that of the vineyard, and entire-

ly beneath the roots of the plant. Whether or not they have been adopted in draining our wet lands, I am unable to say; but they are effective to that purpose; and in a country where land bears so high a value as the vinegrounds of Switzerland, the soil preserved forms no inconsiderable feature in a calculation of the expense of sinking them. The trenches are filled with large broken stones, the angles of which prevent too close a contact, affording a passage for the water from above, and the moisture of the springs, if any, from the soil, percolate till they are discharged at the outlet into the public highway, or some neighbouring brook. On the surface of the soil they are not seen, as a deep covering of earth conceals them from superficial observation, forming thereby no interruption to the profitable cultivation of the ground.

By these means the superabundant moisture is discharged, and the land, which in our country is lost from ditches cut for the draining of wet soils, is preserved to the Swiss proprietor. The humidity of the climate of Switzerland induces cultivation, which greatly increases the expense of the vigneron, and which may not be found necessary or even advantageous with us.

Were I to cultivate the vine in Pennsylvania, with no more light than I at present possess on the subject, I should not, as in Switzerland, select as absolutely necessary (though I admit that a decided preference should be given it) the inclination of a hill as the site of my vineyard. I should seek to unite an arid soil and a dry atmosphere, and, with this view, when the choice

were at command, should certainly prefer a sandy soil, or a soil of stone and gravel. I should by all means avoid a close argillaceous loam, as the rains accumulating on a stiff clay bottom, are, of all sources of injury, most to be deprecated, as hostile to the prosperity of the vineyard. It is on account of the reflected heat of the southern declination, that the inclination of a hill is chosen by the Swiss vigneron, as he obtains thereby an increase of temperature of several degrees, not afforded by the natural climate of the country, and gets rid at the same time of a superabundant moisture, from the rains which dispute with his efforts the artificial advantages he has thus obtained.

In considering the state of the vine cultivation of that country, we should always bear in mind that the climate is so essentially different in many important points from that of Pennsylvania, as to induce a rational belief that the system adopted there, though protected by the fostering hand of government, as well as the active support and influence of private associations, confirmed as it is by long experience, may not be found the best for the American cultivator. Such, on a close observation of the comparative advantages of the two countries, is my decided opinion.

The Swiss cultivator finds it necessary by every means available to his art, to counteract the injurious effects, to which a proximity to the Jura exposes the vine of that country. It is quite a common feature of the Canton of Vaud, to have the mercury of Fahrenheit ranging between seventy and eighty degrees at the meridian,

and be chilled by a temperature of fifty at midnight. Such a transition, and especially where, as in Switzerland, it is almost as regular as the succession of day and night, requires all the advantages which art can bring to the relief of the cultivation, and accordingly the vigneron of the Cantons has found, that the most effectual way to equalize these variations, is to give his vines that heat absorbed by the ground during day, and transmitted after nightfall. It is with this view that the pruning is directed in Switzerland, where at the spring cutting, the vine is reduced to the height of three feet, which brings, of course, the fruit within a short distance of the soil. In fact it would be impossible in that cold country to ripen the grape in any other manner; whilst on the contrary, such a system, if pursued in Italy, would scorch the fruit and induce a premature decay. The like result would probably attend a similar system in Pennsylvania, where the summer temperature is sufficiently elevated to allow the vine to be trailed as in Italy, and ripen the fruit at the distance of a dozen feet from the ground.

It is to the interest of the liberal and public spirited cultivator, that we shall be indebted for much of our knowledge of American vine growing. To that feeling which regards the ultimate object, rather than the immediate effects of the system, which shall induce those intelligent and useful experiments, that are the strong characteristics of Swiss cultivation, and which constantly elicit new lights and establish new facts, of

which, even the practical vigneron can have no anticipation.

Though delighting in a warm and invigorating sunshine, the vine suffers from an elevated temperature, and hence it may be found that with us the reflected heat of the southern declination may prove unfavourable to the cultivation. Another objection to such a position with us may possibly be, that the spring vegetation will be premature, and the blossoms endangered by the late frosts of the season. These are facts to be deduced only from experience. The scorching heats of the torrid zone, and the chilling climates of the north, are both unfavourable to the prosperity of the vine. The best are unquestionably those of a temperate climate, and the soils in which we find the richest productions of the vine, are those of a light sand, and a soil of stone and gravel. In the latter, the absorption of heat during the day, and transmission of it, when the rays of the sun are oblique, tend to maintain an equilibrium of temperature highly favourable to the ripening of the fruit, and a concentration of the saccharine principle, which imparts to the vine its most delicious flavour.

The rains as well as the atmosphere insinuate most freely into such soils, and contribute, and contrive to expand and develop the principle of vegetation. The wines of a close and loamy soil are always inferior, and though the plant shows in such ground, a vigorous vegetation, the product of the vintage is always *médiocre*. The European planter, north of Milan, prefers the inclination of a hill, and the neighbourhood of a

river or lake. The country of the Rhine and Danube produce the most *récherché* of wines.

The vineyards from which we have the Tokay, are in the vicinity of the Tesse. Those of the Hermitage, Cote, Rotie, with other fine wines, are on the banks of the Rhone. The best wines of Switzerland, those of La Vaux, and La Cote, are on the shores of the Lake of Geneva, and the red wines of Cortaillod, in the Canton of *Neufchatel*, are on the banks of the lake of that name. Whilst, therefore, the European planter deprecates as an evil the heavy and continued rains, he invites as we perceive for his vineyard the gentle dews of the mountain, and evaporations of the lake. But little can be positively assumed as to the precise period at which the vine was first introduced into Switzerland. Tradition affirms that the first vineyards of that country were planted by a monastery of Friars, between the towns of Lausanne and Vevey, on a steep hill on the borders of the lake of Geneva, in the district of La Vaux, where at this day the best wines of the Canton of Vaud are produced, and where the vine lands of Switzerland have attained their maximum of value.

I have examined the soil of these positions, which is porous and stony, and so precipitous is the descent, even to the margin of the lake, that to prevent the wash of the torrent, it has been found necessary to cut the mountain into terraces, a custom which, in such situations, is general in that country. These terraces rise above each other like steps, and when viewed from the deck of a steamer on the lake, form a pleasing

relief to the natural wildness of the perspective. With some slight variations from curvatures and sinuosities, the whole line of these hills presents a southern aspect, the feature constituting so important a desideratum in the establishment of the Swiss vineyard. There are not wanting, however, even in that capricious climate, instances where an eastern exposure produces a tolerably good wine; and it appears a question of some difficulty, to which of these advantageous circumstances the superiority of the vines of La Vaux is to be ascribed. It may be a combination of all, though it is believed by many intelligent vine growers, that to each vineyard, nay, to each particular plant, there is a soil peculiarly favourable, which promotes beyond all others its prosperity and advancement. Some among them reject this theory, and profess to consider the earth as the nursing mother of the vine, from which, according to a distinguished Swiss cultivator "it derives its flowers, its foliage, and its fruit," but that the quality of its production, "its vinous essence, its saccharine properties and flavour," are imparted by the rays of the sun, the etherial principle of the atmosphere, and the dews of nightfall.

From the conflicting opinions of experienced cultivators, in a country where for centuries the vine has formed a prominent feature of agriculture, it may be fairly inferred how difficult it is to establish positive rules for the cultivation, or to form any definite conclusion on a subject, where the masters of the art are so much at variance. For my own part, contradictory as they

appear, I think them so in appearance only, and that the discrepancy of testimony is capable of a satisfactory solution. In my opinion, it is the vine which is itself capricious, misleading, like the *ignis fatuus*, the inquirer but just entered upon a consideration of the subject, and that the Swiss proprietor has given the results of his experience, and which may have been decidedly opposite in the vineyard of his neighbour, possessing a different exposure, though at the distance of a hundred yards from each other.

From all these considerations, the American cultivator may infer, that enough is already known to encourage and stimulate him in the cultivation, but that years will probably pass away before the capabilities of his vineyard shall be fully developed. Some will succeed even beyond exaggerated hope; and where the product of others shall fall short, it may yet be equal to an ample remuneration for their expense and labour. Should even their wines be inferior, the reflection naturally arises, what is the proportion in the consumption of ordinary and superior wines. The answer will be greatly in favour of the former, and they will probably be swept off by an active demand, whilst the finer vintage will ripen in the vaults of the factor, and slowly, though surely be required, by increasing wealth, or increasing prodigality. To the cultivator of our country it therefore appears, that the site of the vineyard is a consideration which well deserves a judicious attention. We have reason to deem it less imperative than in the colder regions of the Swiss mountains; but we should not disre-

gard such advantages when fairly at command ; and though in adopting the different systems of European cultivation, no certain reliance can be had that results in our climate and soils will be the same ; prudence will dictate the selection of such a position, in the establishment of the vineyard, as shall afford to the new plantation, a combination of the different advantages of which we have spoken. These are at last experiments, and should not deter those from the cultivation whose farms do not combine all these points. In the Canton of Vaud, the districts not possessing all the advantages found at La Vaux, produce in their vine grounds, (the soil of many of which is as barren as sterility itself) their different wines, which inferior as they may be, are yet the staple of the country, and give to such waste lands a value exceeding that of their richest grass.

The " Vin de la Cote," produced on the borders of the lake, between Morges and Geneva, is the production of that part of the country, next in estimation to those of La Vaux, which, though not so spirituous as those of the latter, appears to suffer less from foreign transportation, and is exported to Holland, England, and occasionally to France.

We find the vineyards producing the best white wines of La Vaux, to be those of Cully, Reiz, Epress, and Le Dessalay. The red wines of the district maintaining the highest reputation to be those of Treytorens, and St. Saphorin. The wine district of the coast is more limited than that of La Vaux, the best coast wines being

those of Tarteguin, Mont, and Fechy. I found, on examining these vineyards, that the soil, like that of La Vaux, was a stoney gravel, and before seeing them, had been at some loss to understand, whence arose the great difference in the quality of the different wines, the situation of both, having been represented to me as similar, and the soils alike. On visiting the vine grounds of La Vaux, the cause of difference was at once apparent. The vineyards of the coast occupy a range of hills, stretching along the shores of the lake, in a slight variation from the straight line, whilst the shores of La Vaux are marked by bold headlands and deep indentations, forming the most picturesque and romantic glens. In these protected recesses, the planter has judiciously established his vineyard, and seized and appropriated the immense advantage of a triple reflection of the rays of the summer sun.

The wines of La Vaux are generally good, but it is almost impossible for the stranger to believe that a difference so striking in quality could exist, as that between the wines of such a position, and those of the same neighbourhood, when the vineyard does not not possess the like advantage.

The district of Paleyres, in the neighbourhood of Lausanne, produces a fair wine, which has the advantage of improving by time, (a feature by no means characteristic of the Swiss wines) and is recommended by the physicians of the country, as salutary and invigorating to the feebleness of age. I remarked in this district no peculiarity in the treatment or cultivation. The vines occupy the inclination

of a hill, and the labour and pruning appeared the same as those of the Canton generally. A perfect neatness was the prominent feature of those vineyards, and order and arrangement were conspicuous among them in a high degree. The plants were free of moss, that noxious parasitic, with which, under a negligent culture, the vineyard is infested and the grounds were clean, regularly staked, and free of weeds. The wines of Montreux are esteemed, and those of Yverne, particularly the red, are considered among the fine productions of the Canton of Vaud. I found in the Canton of La Vallais, between Brieg and St. Maurice, the soil and cultivation not unlike those of La Vaux. The wines of La Vallais are esteemed. A fine Muscat is produced there, bearing, for a Swiss wine, a high reputation, and which I thought inferior to the same wine of France. The two principal wines of that Canton, are the "*Coquempin*" and "*La Marque*," the latter of which, a strong wine, is the produce of vineyards which occupy an exceedingly steep hill, part of which has an eastern exposure and part facing south.

The wines of La Valtaline, and Chiavenne, are also esteemed, among which is a sweet wine, of a strong body for a wine of that country. These are the principal wines of Switzerland, except those of Neufchatel, of these I shall have occasion to speak hereafter.

There are other districts producing inferior wines, which I did not consider as worth the trouble of visiting, and of which I can say nothing; as I wish to confine my remarks to such

as came within the range of a personal observation. Inferior, as they certainly are, to the wines of that country, they demonstrate, in a greater or less degree, the triumph of cultivation over the obstacles of nature, and prove how successfully a skilful agriculture may oppose a barren soil, and unpropitious climate.

There is a feature in the history of Swiss cultivation, for which I am obliged to Mr. Cordey, an intelligent proprietor of Valeyres, in whose well ordered vineyards I passed the vintage of 1831. This feature appears peculiar to that country, and does not, so far as I have learned, characterize that of either in France or Italy; holding out to the American cultivator a strong incentive to untiring perseverance, and calculated, during the progress of an experimental cultivation, to stimulate his exertions and sustain his hopes.

Nature is progressive in her operations, not less in the vegetable than animal kingdom; and her usual consistency has attended the experiments of the Swiss vine dresser. The vine, as is well known, is not indigenous to Switzerland, and consequently the vigneron of that country has not escaped the various disappointments incident to exotic cultivation. In the introduction therefore, into that country of different vines from abroad, it has been frequently found that the plants of foreign cuttings have refused (though arrived at the proper age, and possessing a vigorous maturity) to unfold a solitary flower. Cuttings from such plants have been tried, which have blossomed, and the flowering been succeed-

ed by abortion. From the plants of succeeding cuttings, other cuttings have been cultivated, following up the system for several seasons, till in the end, a complete success has crowned the experiment; and it has been found, that the process of acclimating the stranger plant has not reached its full accomplishment, until it has passed through four, and sometimes five generations of the vine.

Instead, therefore, of expecting direct success from the foreign slips, the Swiss vigneron does not look for it. His first plantation is but the nursery to supply his future operations; and he goes on from season to season, cultivating his cuttings from the plants of the preceding year, without attempting to form his vineyard of the foreign fruit he designs to introduce into his grounds, until the fourth, and sometimes the fifth year from the exotic cultivation. In one corner of the grounds, some half dozen vines, from cuttings of the fourth or fifth year are placed, the position of each of which is distinctly marked, and which, like the fogleman of the rifle corps, whose evolutions regulate in the drill the movements of a new recruit, serve as the indicators of the cultivation. When these vines produce their first fruit, then is the signal that nature has completed her work of acclimation to the new *locale*. From the plants, therefore, of that year, the vigneron commences the business of the new cultivation, and prepares to establish from the exotic vine his regular vineyard.

Such is the process by which the cultivator of the Cantons naturalizes to his climate the foreign

vine. To see the barren source of a prolific vineyard shooting its luxuriant branches through the Trellis which shades and adorns the cottage of the Swiss vine dresser, reminds us of the curse on our race, which visits the sins of the father on his unborn children, to the third and fourth generation.

The foreign vine inherits in Switzerland the like entail, and, by its sterility, mourns for an equal period a country and a home. But here the malediction ends, and the unprofitable vine, which has never cheered with a solitary blossom the toils of cultivation, sees the patient vigneron rewarded by a wide spreading posterity, whose purple treasures redeem the debt justly due to perseverance, and so "fill the garner with plenty, that the presses burst forth with new wine." This tardy process illy suits the mercurial temperature of many of our agricultural community, who prefer for the most part a harvest varying with the capabilities of their different soils, to "some thirty, some sixty, and some an hundred fold." But for such, unfortunately, nature will not reverse her laws, nor change the undeviating course prescribed to her by nature's God. If therefore, we be not content to wait with patience, the issue of her march, availing of results which has cost the European planter much labour and expense, and years of patient cultivation, we realize the story of the silly boy in the fable, who, in thrusting his hand into the jar of filberts, grasped more than he could carry, and lost the object of his avaricious desires. To most of us, the prospect of immediate gain is the

strong incentive to action. It is the lever of Archimedes which turns the world, the passion that most easily besets us, and occupies each avenue of the heart. The several members of the community may find in a fostering protection of the vine, the gratification of this pervading influence. To the farmer, it will supersede the crops that now, from season to season, accumulate in the warehouses of the factor, and reduce to its minimum the harvest of his labours. The landholder will understand the effect on his interest, when he shall reflect that in the Canton of Vaud, where but for the vine, much of the ground appropriated to that culture would be a barren waste, commands in the sale a better price than the richest grass bottoms. The lowest rate at which we may estimate the value of a pose of land in that part of the Canton least favourable to the cultivation, is perhaps fifty pounds sterling. In the district of La Vaux, the best vine lands readily command eighteen thousand francs of France per pose, about three thousand five hundred dollars our money, and, as may be readily supposed, from such a value, is generally in the hands of the capitalist, by whom it is seldom sold, and rarely to be found in the market, except in case of the death of a proprietor, where a sale of it may be necessary to a division among his heirs. I am confident that no other cultivation of Switzerland would give to these lands a value of fifty dollars the pose; and we have in this fact alone an argument paramount to the objections raised against an introduction of the vine amongst us, calling

on us as members of a community, in which agriculture affords an important resource, to adopt a cultivation, promising such important results. Many years ago the raising of the grape was attempted in Pennsylvania. A society bearing the name, if I remember correctly, of the "Vine Company of Pennsylvania," was incorporated by the legislature of the State, and after several years of zealous experiment, were defeated in their laudable attempts to introduce among us the foreign vine. Many intelligent members of the agricultural community were enlisted in the patriotic labour; and the good wishes of the public warmly excited in favour of the infant association, abandoned, I believe, after some years of abortive experiment.

To examine the details of their proceedings, and ascertain, if possible, the remote and proximate causes of their defeat; how far the *locale* on which they established was favourable or adverse to the prosperity of the vineyard; what vines were introduced; their mode of pruning, &c. may afford to those who shall follow in their footsteps, new lights to direct their operations, and become the beacons, by which to avoid the shoals that wrecked the enterprise of their patriotic predecessors. To revive this society, and, under the auspices of public protection, attempt once again the experiment which has heretofore resisted our efforts, following up the system with all the advantages which an observant experience has shed around the cultivator, will be an effective means to accomplish the desired object,

and open the way to a new staple of agriculture.

The subject well deserves the attention of the State, and at a period when the liberality of the legislature expands towards every branch of domestic industry, we cannot but hope that the fostering hand of government will be extended to the protection of the vine. It is in our country the age of internal improvement, and the patriot legislator will find, that the march of his country to a virtual independence of other nations, has no parallel, save in the almost forgotten fable which amused his infantile fancy whilst listening to the marvellous details of the hero, whose seven league wonders have been a fruitful theme of the nursery from generation to generation.

Adjoining the Canton of Vaud, is the Canton of Neufchatel, which, though claiming and recognised to be a member of the Helvetic confederation, is nevertheless, (strange anomaly in the science of government) a province of Prussia; whose monarch, as prince of Neufchatel, is supreme ruler of this sovereign member of the Cantons. But Neufchatel is a vine growing country, and to a lover of the cultivation a visit to her vineyards is a deep gratification.

Among the vine countries of Europe which I have seen, the Canton of Neufchatel is pre-eminent. The hills for several miles around the capital, present beyond comparison the most beautiful appearance of order and regularity.

The symmetry of the vineyard is singularly impressive, and the perfection which the cultivation

of the vine has attained in this Canton, has given to the barren gravelly hills a value which will scarcely be credited by the American farmer.

Under the liberal hand of public protection and individual associations, the cultivation has arrived at the acmé of perfection; and it is perhaps there that the strongest encouragement is manifested in the complete triumph of skill and perseverance, over the many obstacles which nature opposes in general to an acclimating of the foreign vine. The grape introduced was that of Burgundy, and long and arduous was the struggle, on the part of the vigneron of Neufchatel, before the full acclimating of this delicate plant. But now, it is at home, even in that capricious climate, where on one side at no great distance the hoary headed Alps, with the eternal glaciers of Mont Blanc, St. Gothard, and Cenis, shed around their chilly and inhospitable influence, and immediately adjoining, on the other the Jura attracts the dark clouds overhanging her vineyards.

The grape has suffered however from the emigration; and by some of those indefinable causes affecting in a manner so singular the character of this versatile plant, has been injuriously changed in the removal. Perhaps this deterioration of quality may be ascribed to the loss of heat prevailing at Burgundy, or the increased humidity from rains, of the new *locale*; as the soil around Neufchatel is not unlike that from which it was taken.

The proximity of the lake would appear to promise, in the theory, some advantages from the

evaporation of the summer sun, yet we find that the wine of that district is unquestionably inferior to the production of the same plant at Dijon. Yet what is the result? The wines are good, and for Switzerland, of extraordinary flavour, and I ask the American cultivator for a moment to reflect, what would be the annual product of an acre of land, when told that the best wines of Neuchâtel frequently command in the country of their growth, three francs of France per bottle, nearly sixty cents, our money, and the best of it, when age has mellowed its quality, and imparted to it the flavour which only time can give, is not unfrequently sold at four francs the bottle. At the former price, therefore, we find the pose of land producing an annual crop of four thousand bottles, returning to the proprietor the amount of 1200 francs of France, upwards of two thousand dollars, in a single vintage. Let me not be misunderstood. I do not pretend to assert that such prices can be obtained at the press, or even in gross. The conservation, and previous preparation of the wine, and putting it into bottles for the market, must precede a sale at such rates, which is attended, of course, with some cost and labour. This forms another branch of the trade, from which a numerous portion of the community derive a support, by purchasing of the proprietor his crop of wine. Sometimes at hazard, in the early part of the season, before the character of the vintage can be known, whilst the results, like the prizes of the lottery, is in the wheel. At others, as the wine flows from the press, when by a system of transvasing, and not

unfrequently adulteration, by a mixture of the wines of a favourable season with those of an inferior vintage, the wines are got up for the market, and sold in detail. But where the proprietor is provided with the necessary vessels, and proper vaults, for the conservation of his wines, he sometimes prefers to dispose of his crop, in detail, in the same manner; in which case he is enabled, where he has the credit of good faith, to dispose of his wines at an advanced rate over those of the professed dealer, a greater confidence is accorded to the purity of his wines, and their freedom from the pernicious *materiel* used in the process of adulteration and colouring.

It was in the latter part of July that I examined the vine grounds of Neufchatel, and I can unhesitatingly aver, that neither in France, Italy, nor any other part of Switzerland, did I find so perfectly neat and beautiful a cultivation. From a *coup d'oeil* of the vineyards of that Canton, may be perceived at the first blush, the pecuniary profit of their wine making; which is indicated by the great expense at which high walls are erected to protect the vine ground from the northern blast, and the manner in which the mountain is divided into terraces; by which the full force of the reflected heat, is assured to the vine and its productions. Over the gateway, is usually an inscription, showing the date of the erection, from which it is perceived, that many of them are upwards of a century old. The cultivation here is similar to that of the Canton of Vaud, though much more neatly performed.

There is, however, a greater distance between the rows of the vineyard, in this, than in the adjoining Canton, but the plants in the line appear as close to each other, doubtless, in order to obtain all that the land is capable of producing. One of my first reflections on visiting these vineyards, was, whence is it that the vine grounds of Neufchatel, producing a wine equal in quality to that of La Vaux, and commanding in the sale, as fair a price, can be purchased at a rate below that of the vine grounds of La Vaux. Before I saw the capital, I visited the vine grounds of the Canton, but the moment of entering the beautiful city of Neufchatel, we bid adieu to all the captivating appearances of Swiss simplicity. In vain the eye seeks amid the pomp and luxury of vice-royalty, the unpretending comforts we have left behind.

The gaudy palace, with its gilded fretwork, proclaims that the leech is there which preys on the life blood of society, and wrings from the hard hand of industry its scanty pittance, to glitter like the phosphorescence of corruption in the gauderies of the crown. Yet it is but justice to say of the Prussian king, that his sway is mild and paternal, and that the people of Neufchatel appear contented and happy. The taxes of the Canton are lighter than those of their neighbours of Vaud, and if compared with some of our own local governments (Philadelphia, for example) are as nothing. Yet under much heavier burdens we are prosperous. Republican institutions impart to all within the sphere of their influence a moral, a *pecuniary* value un-

known to despotic rule. We confide in the permanency of the system, where the people are sovereign, and feel that no oppression can live, which springs from a delegated power, whilst the inhabitant of Neufchatel has no security for his rights but the personal character of his king, whose breath, like that of other men, is in his nostrils, and who at any moment, may be called to his eternal reward, to be succeeded, it may be, in his government, by all the misrule which stains the story of Nero, or Domitian, or Caligula.

The wines of Neufchatel are white and red, the latter being generally preferred, having more body, and capable of preservation to a greater age. The white, however, possesses this advantage: it better resists the rigours of the Swiss climate, and flourishes when a less degree of heat can be obtained, and where any attempt to cultivate the red grape must be futile. I have omitted in this brief view of the Swiss vines, some of the minor districts of the country, confining myself to such as came within the range of my personal observation. Many of these appear to me, to possess important points, available to the American agriculturalist. The vine is indigenous to the United States. To Switzerland it is of foreign origin. Is it not strange that in Pennsylvania, the climate of which forms a summer temperature, eminently favourable to the habits of the plant, we should this day be tributary to foreign countries for an article which by habit has become a necessary of life, and continue to change the harvest of a hundred

acres of good land, and the labour required to produce it, for the produce of a single *arpent* of French vine ground. Yet such is the case; and it is a reflection on the national character, that a lethargy so unaccountable should trammel the energy of our agricultural community, and lock up a bountiful source of relief to our suffering cultivation. Let us profit by the experience of the Swiss vine dresser, and I do not despair of seeing in ten years, the vineyards of the United States rivalling in luxuriance, and surpassing in the quality of its productions, the vine of Switzerland.

## CULTIVATION

OF THE

## VINE IN ITALY.



## CULTIVATION, &c.

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“CAN the Ethiopian change his skin, or the leopard his spots,” is the energetic language of holy writ, from which we feel the full force of the law established for the government of animal nature. Whether in the deepest recesses of his native forest, or the circumvented captive of man, the ferocious being referred to, is still the same. An intelligence more effective than physical strength dooms him to a life of durance, which violates the strongest principle of his nature; and his indomitable spirit is trained to obedience by hunger and stripes. But a thirst of blood shows him controlled, not changed; and bolts and bars are the strong assurance we feel of safety in his presence. Death, the great scene shifter, confirms, rather than changes his attributes, and carnage follows in his train, as the brindled housing adorns the war horse, and inflames the spirit of his martial rider.

Sufferance, saith Shylock, is the badge of our tribe; and the patient son of Africa, long the sport of cupidity and violence, hath a prescriptive title to appropriate the axiom.

Though the broad wave of ocean rolls betwixt

him and his native fields, and generations have faded since his forefathers were spirited from their homes, he still bears on his front the burning memorial of the equator's sun.

Not so with the vegetable world. The russet brown of the Swiss vine is changed in the neighbouring state for the yellow skin. The same plant shows there another foilage; vegetation is more active; and another hue, and different cultivation, are induced by a fertile soil and more genial climate. Italy is justly styled the garden of Europe. The rich exuberance of her olive yards and vine grounds indicate the strength of her soil and mildness of her climate, and the rank luxuriance of vegetable life, is in striking contrast with the wan cheek and enervate frame of the cultivator of the modern Eden. Nature has been prodigal of her bounty to this favoured land, and where such is the case, man is in general studious of ease.

In passing from Switzerland, it is impossible to overlook the effect which a difference of climate has exercised on the appearance of the two countries. The agriculture of Switzerland is a system of patient and persevering labour, and the soil yields ungraciously her stinted crops. The appearance of the Swiss peasant corresponds with the bold and rugged outlines of his country, and his robust and hardy bearing manifests a contempt of forbearance, and a familiarity with exposure. That this difference should be a feature in the agriculture of the countries, is a natural consequence, and accordingly we find that though the cultivation of the vine in Italy, from

the great difference of the climate, varies essentially from that of Switzerland, it has not received the same care, nor attained the same perfection in the former, as in the latter country. Notwithstanding this, the wines of Italy are far superior to those of Switzerland; and it would be difficult to imagine, to what an exquisite perfection they might attain under the judicious attention of Swiss industry. But they are good enough as it is, and some of them are not surpassed, if indeed they are equalled, by the productions of any other part of vine growing Europe.

In quitting Switzerland for the south, two principal roads cross the Alps, that of Simplon, by Milan, and that of Mont Cenis, by Turin. Both these roads traverse a country luxuriant of vines; and though I have twice passed each, the passing of the latter was early in spring, whilst both passages in going south were made during the vintage, thus affording a better opportunity of observing the character and cultivation of the vine in Italy.

We find on the Cenis road, on approaching Chamberry, (the capital of Savoy) a country fertile of wines, presenting to the eye the most beautiful undulations of vine covered hills and vales.

Though the vine constitutes in Savoy a prominent feature of the agriculture of the country, the vineyards around Chamberry afford no peculiarity in the history of the grape, the cultivation of which differs entirely from that of Switzerland, and here, for the first time since quitting

that country, assumes the appearance, which a difference of climate and treatment have given to the Italian vineyard. One of the most remarkable of the vine growing districts on this route, is at the village of St. Julien, the singular aspect of which can hardly fail to arrest the attention of the traveller at all curious in the study of the vine. The vineyards of St. Julien occupy the sides of the most barren rocks of that country; and I was at a loss to discover the necessary soil for the support of the plants. The vines were not more than six inches in height; of short stunted growth, and crowded together in a confused mass, without order, the space intervening being scarcely sufficient to allow the weeding them. The weeding, if any, must of course be the work of the hand, though I could not perceive enough of soil to presuppose the necessity of that operation. It is to the peculiarity of this stony *locale*, the reflected heat of the sun, and the absence of humidity from springs in the vine grounds, that the delicate flavour of the wines of St Julien is to be ascribed. The extreme sterility of soil, which checks in the plant that tendency to florid vegetation which is so strongly characteristic of the vine, is regarded by the vigneron of that district, as conducing in no small degree to the reputation of his vintage. But the delicacy of these wines is such, that they do not bear a foreign transportation, and when drunk abroad, they are of necessity so highly reinforced, that they bear an inferior and different character. Both red and white wines are produced at St. Julien. I consider the latter

to be the pleasanter wine, being free from the astringency common to the red wines of Italy. It is the cultivation of that part of the country traversed by the Simplon road, with which I am more familiar. The village of Domo d'Ossola, the first Italian hamlet at the foot of the Alps on entering the Milanese, is the threshold of that vine growing country, though, from a proximity to the mountain, the seasons of the district are irregular, and therefore the vine can hardly be expected to possess the superiority belonging so generally to the southern climate. The plain, at the commencement of which this village is situated, is fertile to an extraordinary degree, and in passing the road thence, on approaching the little town of Baveno, on the Lago Maggiore, the whole country may be termed a vineyard, as in all the cultivations, whether of corn or grass, the vine is introduced, forming a prominent feature of agriculture.

From this point to Milan the vine abounds, and to wander at leisure through the country, in the height of the vintage, is to riot in pleasure, realizing all that the most ardent imagination can conceive of the festival of Pomona.

I have seen at noon a number of donkeys released at the vineyard from the labours of transportation, each with his head half buried in the embouchure of a cask, surcharged with the delicious fruit, devouring with avidity the newly gathered grapes, and a stream of sweets flowing from either side of his mouth. I cannot recur to the incident, without an active sympathy in the

delights of the laborious little operative of the Italian vineyard.

The road between Milan and Bologna, traverses the plains of Lombardy, a country of luxuriant fertility, from which the husbandman receives four, and sometimes five crops in the year. The intervening space, as far as Lodi, is a perfect plain, in which extensive crops of rice are cultivated. Here also the vine flourishes with a luxuriance corresponding with the fertility of the soil. Their wines however are not of long duration, and their quality confirms the theory, that a close argillaceous bottom, though giving to the plant an exuberant foliage, is not the source from which we derive the finest wines.

From this point, as far south as Naples, the cultivation is similar, differing from that of Switzerland, both as to pruning and exposure. The vines are planted in rows, about twenty feet apart, and the plants in the row at the distance of six feet from each other. Instead of being, as in Switzerland, cut down to the height of four feet, they are suffered to shoot forth their branches to the extent to which nature limits them, and the fruit may be seen in ripening clusters, frequently twenty feet from the ground. The support is the mulberry tree, the branches of which are reduced to the length of five or six feet from the trunk at the point of diverging, the inner shoots being so cut as to form a frame resembling in shape the cone of a wine glass. The branches of the vine are trailed in graceful festoons from tree to tree, the tendrils insinuating through the frame, form tops in such a man-

ner that the broad leaf of the mulberry effectually shelters the fruit from the scorching heats of the Italian sun. I consider this mode of supporting the vine, as decidedly objectionable. The roots of the living tree cannot fail greatly to check the growth of the plant, choking the fibrous radicles which, like so many feelers, the vine puts forth in every direction, in search of nutrition and aliment. Every vine dresser is aware of the importance of keeping his grounds free of weeds, and especially the vine itself, from the noxious parasitic with which, under a negligent culture, the vineyard is infested. This remark applies also to any extraneous cultivation among the vines; and it is in cupidity, not ignorance, that the Italian cultivator gives to his vines the support of the living tree. Of the four cardinal sources, of the wealth, for example, of Tuscany, the silk worm is not the least; and the leaf of the mulberry, as is well known, is the favourite food of that industrious little minister to the vanity of their fairer portion of the civil community. With the Italian community, the cultivation, therefore, is of interest, as he derives from the labours of the silk worm a more than full indemnity for the injury inflicted on the vineyard. Such motive cannot influence *us* in the cultivation, as our country affords sufficient space to allot to each a distinct establishment; whilst in Italy they have been crowded together, by the necessities of a dense population, and the consequent high price of land.

It does not appear to me that it will be found necessary in our country, to leave so great a space

between the rows of the vineyard as in Italy, where the Italian husbandman cultivates his crops of grass and grain, greatly, as I think, to the prejudice of the vineyard. The vines are planted in a line of cultivated ground, the breadth of which is about three feet, showing a careful digging, which keeps it soft and mellow, and generally free of weeds. On the same plain is the Duchy of Parma, exhibiting a similar cultivation and production, in which little peculiarity is found.

In the Duchy of Modena, the state adjoining to Parma, where the soil and cultivation are the same, there is little variety as to the fruit cultivated.

The *Malvoisie*, a delicate fruit, is found at Modena in great perfection; and to those seeing it for the first time, presents a striking peculiarity. The bunch is large, weighing from one and a half to two pounds.

The fruit is so small that it does not exceed the size of the elder berry, and without seed. On each bunch may be found some half dozen grapes, as large as the native black cherry of Pennsylvania, having the usual number of seeds, a peculiarity, as I observed, of the *Malvoisie*. The grapes possess a luscious saccharine flavour, affording a delicious wine, in great estimation among the Italian ladies, and bought with eagerness by Courts and Kings.

The situation of Parma and Modena, is at variance with the Swiss doctrine, that the inclination of a hill is essential to the prosperity of the vine. In fact, it is not so in a country

where the natural heat of the climate is equal to a temperature of seventy degrees, during a considerable part of summer. The wines of these districts, though delicious when new, will hardly support the keeping of three years; and it will be recollected, that but little attention is given to the conservation of them, as the vintage, unlike that of Switzerland, which is exposed to injury from a capricious climate, is uniform, and abundant, affording each season, a product more than sufficient for the requirements of the country, though consumed with a liberality, characteristic of excessive abundance. The cultivation of Italy affords the strongest encouragement in favour of an introduction of the vine amongst us. I have before adverted to the great labour bestowed on the vine in Switzerland. Such is the forced state of vine growing in that country, that it appears as though a constant warfare, on the part of the Swiss vigneron, was waged against the capricious inconstancy of his climate. But the cultivation of Italy is widely different. Ceres and Pomona have vied in scattering the treasures of autumn before a favoured people, and the full horn of plenty, is exhausted in diffusing the richest abundance through the classic land. The success of the vine, with but little labour, is almost miraculous, when compared with the cultivation of their Trans Alpine neighbours; and the superiority of the wines of Italy, over those of the narrow region between the Alps and the Jura, is a convincing proof how greatly the quality of the vintage is indebted to a genial soil and propitious climate.

In the Italian mode of cultivation, which, from different motives, will probably be that adopted in Pennsylvania, we shall avoid much of the labour given to the vine, even in Italy, because, though in that country, the rows of the vineyard are at best twenty feet asunder, the instrument of dressing is, in almost all cases, the spade or the hoe. I do not remember once to have seen the plough amongst their vines, whereas with us, when labour is so important a feature in the calculation, it may be advantageously introduced, and in careful hands, safely used in the cultivation.

Many of the most delicate wines of that country do not bear a foreign transportation; and it is but natural to suppose, that their system of wine making has not received the same attention which, but for that circumstance, would otherwise be given to it.

That from such a variety of circumstances, affecting, in a greater or less degree, the prosperity of the vine, will naturally spring a wide difference in the treatment and cultivation, is manifest at the glance, and it is by the study of a character so curious, forming a subject of fruitful theory and endless experiment, that the judicious cultivator will avail to seize the fugitive traits as they are elicited and give to it a permanency which shall arrest and control itsameleon hues. To the American cultivator, this forms a primary object. He will soon be convinced that the previous history of his foreign vine has but little influence on the future cultivation, and furnishes no data on which to build his hopes of

success. It is an actual regeneration, accompanied by its own peculiar character; and to these traits successively developed by the difference of soil, climate, and treatment, must he look, forgetting the circumstances by which it was affected at its European home.

If this should excite the incredulity of the agriculturalist, or raise in his mind the idea of a discrepancy in our testimony, we refer him to the vine growing district of Naples, where he may see a striking difference existing in the vine, from cuttings of the same plant, though standing within fifty yards of each other. The *locale*, known by celebrity, is on the side of Vesuvius, descending as far as the point to which by the famous eruption of the seventy-ninth year of the Christian era, the ashes were thrown, and which forms the line of demarkation, between the volcanic and natural soils. Here the vines are totally dissimilar, and to an unpractised observation, would hardly be recognised. The first affording a wine, the fame of which has inflamed in every part of the globe the appetite of the *gourmand*, while that of the natural soil is an ordinary, if not inferior beverage. A like difference is observed in the plant which shows another foliage, pushes its branches with a diminished vigour, the stock assuming a different colour, and having, to a superficial observation, such distinctive points, as to induce the belief that it was a different member of the family.

This, however, is a digression. In crossing the Appenines, on entering the dominions of Tuscany, vineyards from the base almost to the

summit of the mountain, occupy the line of road, affording vines almost as various as their numerous positions, and differing from each other according to their several exposures and cultivation.

As I passed the last time, I found at the summit the vines loaded with ripe fruit, though a heavy fall of snow was at that moment covering the ground.

The premature frosts to which a position so elevated is naturally exposed, are manifestly injurious to the vintage. The wines of such situations are unequal, and no reliance can be had on their quality, though it sometimes happens in a favourable season that they are peculiarly fine, and in such seasons, from an uncertainty of the mountain climate, the wines bear a correspondent value.

On descending the southern side of the Apennines, a more genial climate affords a better cultivation, and here the olive shares with the vine the attention of the husbandman. In general they are found on the same ground, the olive being here, as the mulberry in Lombardy, the support of the vine. In some of these positions the soil is a red gravel, which, from its loose and open character, parts freely with the rains incident to a mountain climate.

Among the wines, both white and red, of Tuscany, but few will bear a foreign transportation without a reinforcement, which destroys the delicacy of their flavour, and neutralizes the fine properties of the wine.

A favourite wine of that country is the "Alia-

tica," which is a compound of rich and luscious flavour, rather cloying the appetite. It is in high favour with the Tuscan ladies, and should be considered as a cordial rather than a wine. The country around the capital is mountainous, and the soil a stony barren. The plain on which the city stands is extremely fertile. Yet such is the temperature of the summer climate that the pruning is the same in the vineyard of the hills, as in that of the valley of the Arno, the extended level immediately circumjacent to Florence.

The labour of the vineyard is principally by the hand, the daily wages given to a workman being from one and a half to two Tuscan pauls. The paul is worth about eleven cents, our money.

It is almost incredible how little work a labourer of the vineyard of that country performs, when compared with the Swiss operative. But fortunately for the Italian proprietor, his vines require less labour; his wines are infinitely superior, and of greater variety. Finer wines ripen in his genial climate, and it does not cost him more than half the price which a Swiss proprietor is obliged to pay for the daily labour of the vineyard, though, as I have before said, the work of both countries is by the hand. It is, unquestionably, a safer cultivation, and exposes the roots of the plant to fewer chances of injury.

The ox and horse devour with avidity the young foliage, and unless muzzled, inflict a serious mischief on the young and tender branches.

From Florence, southwardly, the country on both sides, is studded with olive yards and vine

grounds. The wines are in general like those produced in the vicinity of the capital, and little variety appears until arriving at the village of Chiuse, the ancient Clusium and capital of Persenna, which, on account of its noxious atmosphere, has a sparse population, and makes but little wine.

At Radicofani, the frontier town, we leave Tuscany, and on entering the Roman territory, the first vineyards in estimation are at Bolsena, on the pretty little lake of that name, the ancient *Lacus Vulsenus*.

Although the vineyards commence at Bolsena, the wine is known as the *Orvieto*, from a small town of that name in the neighbourhood. The vineyards produce an excellent light wine, of a pale transparent amber colour, and when drunk in its purity, is of a highly delicate flavour, but little inferior to the famed production of Vesuvius, without possessing so much body. The wines of Orvieto, so extremely delicate, are sensitive to injury by the slightest deviation from the ordinary method of conservation. Transportation to a distant country, or even the adjacent provinces, being out of the question, it is only known in perfection in the Roman State.

The next wine on the road which deserves attention, is at Montefiascone, a fortified town, surrounded by highly cultivated vineyards, where a greater care appears to have been given to the vineyard than at any point of the road leaving Florence. The wines of Montefiascone are deservedly considered among the finest of the wines of Italy. Tradition tells us of a German

ecclesiastic, who was arrested on his journey by the seductive attractions of this place, and lost his life in an undue indulgence of the pleasures of the wine cup. These wines are both white and red, possessing more body than the Orvieto, though, to my taste, a less delicate flavour.

They certainly maintain in the country a higher reputation than is conceded to the other wine. I understand that these wines have been imported into the United States, but from what I saw of them, am of opinion, that to bear the foreign transportation, they must be so highly reinforced as to destroy, in a great degree, their delicious flavour. There is in these wines a peculiar delicacy, the loss of which would be immediately detected by such as have drunk them in purity.

On leaving the States of the Church, and entering at Fondi, the dominions of the two Sicilies, new varieties are found springing from other soils, and different exposures. The wine most celebrated at Naples, if not throughout Europe, is the "*Lachrymæ Christi*," a name regarded by us as a profanation of all that is held sacred, and exposing the people of that country to the anathema of our Protestant community. How far we are borne out in such opinions, may be referred to that Christian charity "which thinketh no evil." A more intimate acquaintance with their religious community changed the feelings of prejudice conceived against this people. If we admit that the principle of right consists in the purity of intention, the sweeping censure in which we sometimes hear them in-

discriminately condemned, may argue but little acquaintance with their true character. I have met amongst the Catholic clergy of that country, those whose erudition and attainment make them conspicuous among the votaries of learning. Many of their order furnish an example of practical charity, calculated to cool our sectarian pride, and leave but little room for an indulgence of that gratitude which thanks heaven that we are not as others.

In visiting the vineyards producing the *Lachrymæ Christi*, we are again forcibly reminded of the changeful influence of soil, exposure, and position, on the productions of the vine. In reasoning from analogy it would be supposed, that a hint favourable to this branch of agriculture might be availed by the intelligent cultivator, to arrive at the same results, and that by the adaptation of a similar soil, a like exposure, with due attention to other attendant circumstances, he might produce a wine, resembling in some degree at least, that which he designed to perpetuate. It does not appear, however, that such is the case. The *Lachrymæ* is produced in the ashes deposited by the famous eruption of Vesuvius, which in the seventy-ninth year of the Christian era, entombed the cities of Herculaneam and Pompeii, whose site was lost to the world for seventeen centuries, and around whose history, the mist of fable had gathered in dusky shadow, resembling the feeble light of antediluvian story. The soil by which Pompeii is covered is loose and porous, and so light as to be blown into heaps in the direction of every strong wind.

To this circumstance was the discovery due, as in one of the Sirroccos, common to the Bay of Naples, the ashes were so blown away as to expose to view the top of a chimney, leaving it a foot or two above the circumjacent ground. It does not belong to our subject to enter on a detail of the curious incidents unfolded in the uncovering of the forgotten city; the feverish excitement on the subject is inflamed rather than allayed by the disentombing of Pompeii, as the antiquary wanders amongst her majestic ruins, or pauses to admire the exquisite touches of the chisel, with which "by gone days," have inflated ephemeral dignity, or patrician pride.

To our present purpose, her chief importance arises from the circumstance that she lies beneath the ashes producing the *Lachrymæ Christi*. The two wines, the white and the red, differ considerably in character, though each is esteemed among the cherished productions of the Italian vine. I consider the former as possessing the more delicate flavour, being free from the astringency common to the red wines of Italy, and bearing a slight resemblance to a light old Madeira, though with less body. I found the red *Lachrymæ* so slightly imbued with the astringency spoken of, as scarcely to be detected on drinking the first glass. The best specimen of that wine available to the stranger visiting that country is probably at the Hermitage, a monastery of Friars, inhabiting a position about midway as you ascend to the crater of Vesuvius, and in the centre of the extensive vinegrounds. It is there that it is to be drunk in the highest perfec-

tion, as one of the most judiciously cultivated vineyards is possessed by their order.

The Hermitage is the hospitable rest, at which the curious traveller usually halts for an hour's repose, on his toilsome ascent to the crater.

Whilst the lover of classic lore is drinking deeply at the springs of ancient knowledge that issue from the opening of the long lost city, the cultivator of the vine looks sadly on to see the yearly inroad of his favourite domain, and the destruction of the modern nectar. The Forum of Nundinarium with its dependencies, cost the owner a vineyard of the Lachrymæ. Another fell as the Temple of Isis appeared, and perhaps the incense of a sacrifice more costly never rose from her altar, in the zenith of her heathen glory. The resurrection of the ancient city is the grave of new wine. It is the passing of the Rubicon, which admits of no return. Knowledge triumphs over the grosser appetite, and the lover of good cheer sighs to see the foot of Minerva on the neck of the rosy god. It must not however be supposed, that the victory is opposed without a strenuous conflict to avert the threatened calamity. Efforts are constantly made by the cultivators of that country, to perpetuate the wine by a removal to other positions of the ashes; but the wine is no longer the same, and confirms the history of that versatile plant, which admits of no reasoning, and baffles all analogy, leaving to the vinegrower no star to direct his course, but the knowledge of facts as they unfold to his practical observation, and furnishing

when thus disclosed but little information to his neighbour half a mile distant.

"To judge the future by the past of man," is the fruit of experience in the study of human character. This capricious member of the vegetable family sets at nought such reasoning; and the only explanation we can give of its habits, is in the reply of the blind man of the parable, "one thing I know, that whereas I was blind, now I see." The moral of the sentiment applies in all cases to a new cultivation of the vine, and its application is direct and palpable to the introduction of it into the United States. It is in fact an alien amongst us, as the limited extent to which it exists in our country, though sufficient to demonstrate the practicability of the cultivation, has not developed the rich resources, which judicious experiment may disclose to industry and skill.

I have before expressed the opinion, that we shall know, *a priori*, the details, which in a few years hence may be familiar to the American vine grower; but availing of the practical knowledge which long experience has shed around the operations of the most successful European cultivators, we may commence with but little fear of the result, the establishment of vine plantations in those sections of the country, where the summer affords a sufficient temperature, and learn for ourselves the elements of a system, which shall probably unite with our agriculture a staple, the cultivation of which may soon be as well understood as that of an ordinary crop of grain. In deciding on adopting the culture of

the vine, it becomes an interesting question at the outset of the experiment to consider, what are the particular species of the plant, on which may reasonably rest our strongest hopes of success? It is a question involved in doubt, and susceptible of as much speculation as there are different aspects of position and varieties of soil.

We have at command three several points at which we may commence an experimental cultivation, namely the foreign vine (*vitis vinifera*), the domestic grape (*vitis sylvestris*) and the seedling plant.

Preliminary to an introduction of the first, the foreign vine, two considerations deserve attention, to wit: the experience of the few cultivators who opened, as pioneers, the untravelled path, and form at this day the vanguard of the cultivation, and that deducible from the parallel circumstances of the same soil, a like exposure and climate, in the different vine countries of Europe. In the former, affording information so limited, we have yet the important fact that the vine can be successfully cultivated in the United States, and though I readily admit the slender reliance due to a source of information so doubtful as that of the latter, I consider it important to an experimental course, and that a race of facts shall be the peculiar offspring of American soil and cultivation. In reflecting on the character of the foreign vine and its productions, it cannot have escaped our observation, that of the various wines imported into the United States, those produced near the ocean, whether at the Cape of Good

Hope, the island of Madeira, the Canaries, the Azores, and islands of the Levant, as well as the shores of the Mediterranean, maintain in general a fair and often superior character. If a proximity to the ocean shall be found favourable to the cultivation, it will open to our industry a long line of sea coast, in a great degree barren of profitable agriculture, many of the inhabitants of which derive a considerable portion of their support from the natural privileges of the ocean.

My observations of European vine growing confirm the opinion, that a strong hope may be reasonably entertained of a successful cultivation near the sea. A sandy soil, it is well known, is favourable to the habits of the plant, and equally so to the results of the vintage. Then there are parts of the coast where the rains of September are less frequent, and of shorter duration, and where the sandy character of the soil does not retain the moisture at the surface, or near the roots of the plant.

My knowledge of the sea coast of our country is limited to the county of Cape May, in the State of New Jersey, and having passed there some of the early part of my life, I have a partial acquaintance with the agriculture of the country.

In the remarks here made on the capability of that district to the cultivation of the vine, no motives of self-interest can be ascribed to me, as I do not possess an acre of land in New Jersey, which, directly or otherwise, can be benefitted by the introduction of the vine into that country. They are dictated by a belief strongly impressed on my mind, that there exist facts sufficiently

established to justify the attempt in that part of the State, with more than the mere hope of a fortunate result. The soil, a light sand, has as much fertility as is required by the wants and habits of the plant, and so open in its nature as to carry off the superabundant moisture, and allow at the same time the vine freely to push its roots, both superficially and in depth, in search of the nutritive aliment congenial to its prosperity and advancement. The climate during the summer has a temperature equal to the production of the finest wines, and the general character of the month of September, as is well known, is remarkably dry, insomuch that the crops of the country are frequently much injured, and sometimes entirely cut off by the excessive drought. Agriculture at Cape May has perhaps received less attention than in many other parts of the country. The extensive forests of the southern section of New Jersey, and the facilities afforded by the various navigable waters, intersecting the country and so communicating with the Bay of Delaware, have opened to the inhabitants the profitable market of Philadelphia; and it has heretofore been found that in the rapid growth of their woods, and the increasing price from an increased consumption of fuel, that a better return has been made to the proprietor from the trade in timber, than from the cultivation of the land.

The introduction of the anthracite as a fuel and the diminished price of that article from the opening of new mines, in almost every part of Pennsylvania, within reach of the city, threaten

to the inhabitants of Cape May, the entire extinction of that profitable branch of industry.

There are perhaps few parts of the country that would be less sensibly affected by an inroad so sweeping of a staple production. No public highway from city to city, makes a thoroughfare of the country, and it may be questioned if any part of the Union has, from generation to generation, preserved, since the early settlement of the country, a more primitive character. Luxury, comparatively speaking, is but little known among them, and there are but few parts of the country, remote from a populous capital, enjoying, in such profuse abundance, the solid comforts of life. A pure, undefiled republicanism exists in their society; and though there are still among them many landed proprietors, who yet possess the extensive grants of the original settlers, and whose descendants, like the Swiss, consider it a sacrilege to alienate the freehold of their progenitors, it appears as though the distance betwixt man and man, which in Europe springs so frequently from a capricious blindness of fortune, prevails there to a less extent than in any country I have seen. The mutual dependence of the land holder on his poorer fellow citizen, in a country where slavery has been long abolished, and of the labourer on his employer for direction and friendly sympathy, have so knit together the several branches of their community, that this feeling is transmitted to succeeding generations, and establishes between them an interest beneficial to both parties. The reduction at Philadelphia of the value of their staple, and the di-

minished quantity of wood now annually sent from Cape May to our market, have affected the southern section of New Jersey, and interest each member of her community in the adoption of a substitute which may avert the evils of such a change. Her land has fallen in value, labour diminished in price, and the operative, not less than the proprietor, suffers a correspondent reduction of revenue. The remedy however is at hand, and in the cultivation of the vine, the people of that country may find an indemnity for the loss of the market of Philadelphia, for the productions of their forests, nay more. From what I have seen in Europe of the profits of the vintage, it would not excite in me the least surprise, if in the successful cultivation of the vine, the inhabitants of that country shall find not merely an indemnity for the depreciation in the value of their timber, but an annual revenue from each acre of vineland which shall equal the capital, for which in their prosperous day they sold the fee simple of an acre of woodland.

A strong argument in favour of the introduction of the vine in that country is, that it has already been tried there, and ripened its fruit. It is true it was to a limited extent, but I well recollect that some twenty years ago, I sent to that country the cuttings of several varieties of the foreign grape, which ripened their fruit as well as in the protected atmosphere of Philadelphia. Some of these were the black Hamburg, a most delicate fruit, and the complete success which attended the whole progress to maturity of this sensitive exotic, cannot fail to infuse into

our cultivation the most auspicious and flattering hopes. These remarks as to the capability of Cape May for the cultivation, may be applicable to other sections of our sea board, many of which, I doubt not, possess a soil and climate equally favourable to the requirements of the plant.

The sandy character of the State of New Jersey, south of the capital, Trenton, fully justifies the belief, that the vine will one day constitute an important feature in the agriculture of the country.

Along that part of the coast of New Jersey, of which we have spoken, there are several islands, destined, I fully believe, at some future day to be vine growing countries. Those most familiar to my recollection are, the "seven mile beach," and the "five mile beach." They are about two miles from the main land, and nearly in a state of nature. These islands produce a native grape, and may probably be cultivated with success as well there as in other parts of the country, and a great improvement may be expected in this native vine, the fruit of which will doubtless be favourably changed by careful cultivation and judicious pruning. Indigenous to the soil, nothing is to be feared, and much to be hoped from a system of cultivation, by which the savage propensities of the plant will be subdued, and the qualities of its productions ameliorated. One of these islands is so covered by the native vine, that it appears as though nature intended it as the home of the grape. From this the inference appears irresistible, that the

experiment to civilize this vine, and bring it into cultivation, can hardly fail of success.

I understand that a small grape (which, however, I have not seen) is produced on one of these islands, possessing a rich saccharine flavour, remarkable for a savage fruit, and which, so far as I heard, has never been cultivated by an inhabitant of the main. I have twice sent thither for the cuttings of this vine, but in both cases the proper season was suffered to elapse before they were taken from the plant, and I found that the moral inculcated by the instructive fable of the lark and her young, afforded me the strongest reliance for the accomplishment of my wish. Through the whole of our vast country, it is probable, may be found varieties of the native vine, worthy of introduction into our grounds. The little white grape from Schuylkill county, in our own State, known as the Orwigsburg, and the Scuppernon of Virginia, may both be cited as deserving the notice of the cultivator. The former has been tried on a limited scale, and it must be admitted with but partial success. That success at the outset of the experiment was but partial, would be considered by the Swiss vine dresser as strongly favourable to the issue of the theory, as such partial success is the first development of the powers of the plant, the first advance to a new *locale*, and indicates the commencement of a contest which nature is generally compelled to wage, with an opposition to her love of conquest, and the extension of her vegetable kingdom. It is to be regretted that the cultivation of the Orwigsburg was abandoned, and the want of

complete success from her first cuttings should have induced a belief that the experiment had failed. The Swiss vine dresser knows better, and the surprise with him in such a case would have been, that his plants had at all produced fruit. It is true that the grape of Schuylkill county had been taken, in the first instance, from the woods, (so says tradition); but it has been questioned by some, whose opinion is entitled to respect, whether this grape be not of foreign origin, and by some freak of nature found its way to the forests of the western world. Be that as it may, the change of habit from a savage to a civilized home, is not, in the vine, the business of a day.

Between animal and vegetable life there is a close analogy. In man, the transition from a savage to a civilized state is not effected but by moral and physical changes, equally painful. The removal to a distant quarter even of the same country, frequently induces a distressing revulsion, and the process of acclimating is generally effected by slow and gradual suffering. But the ordeal passed, the elastic energy of the constitution restores its powers, and nature asserts her legitimate sway. With the vine, the parallel is striking, and it has not escaped the vigilant cultivator, that a removal of the vine to a foreign country, is succeeded by a sickly repining which checks the vigor of the plant. The shooting of the branches appears an effort of nature. The foliage assumes a less brilliant hue. The plant languishes, and the whole vegetation indicates a struggle for life. A part of

this evil sometimes arises from the want of knowledge, or neglect in the transplanting. In a removal of the rooted plant, great care should be given to the nature of the soil from which it was taken, and, as far as in our power, an adaptation of similar soil and exposure in the new location. It is important also to observe before removal, the aspect of each particular vine, and to give it the same exposure. If we afford to the anatomical structure of the plant the attention it deserves, it will be found on examination, that the southern side is more porous and spongy, and the sap vessels more dilated, than on the side facing the north. The southern surface is more delicate, less capable of endurance, and easily affected by the rigors of a severe winter. Hence if, in the replanting, the southern aspect be changed, the vine droops and languishes for a season or two, until nature accommodates to the change, or as in many cases, the plant, unable from constitutional debility, to support the ordeal, lingers in sickly vegetation to premature decay.

Such is the general history of removing the rooted plant, and so decidedly in Switzerland has experience established the inexpediency of this mode of cultivation, in forming a new plantation, that I do not recollect once to have heard a skilful vine dresser who did not condemn the culture as injudicious. There is but one case in which it is at all justified among them, and then it is only tolerated. It is when the soil is so adverse to the vegetation of the cutting, that they

are compelled to resort to a planting of the rooted vine.

Such soils in general, though defeating, for a succession of seasons, the persevering efforts of the planter, have yielded to a cultivation of the rooted vine, and though it has resulted that the vineyards of such a source flourish, to all appearance, in healthful vigor, it is generally conceded that the product is less abundant, and the vine of shorter duration, than from the former source. It is in fact the last resort of the mortified vigneron, defeated by the successful opposition with which a stubborn soil has disputed his industry.

Amputations are the disgrace of surgery. The business of the profession is to save, not destroy the limb, and the hapless subject of the tourniquet and scalpel, who drags through life the remnant of a mutilated frame, is a moving monument of the imperfection of the healing art. It is equally so with the Swiss vine dresser, when defeated in the attempt to establish from the cutting his new plantation. There is a strong "esprit du corps," among the cultivators of the vine in the Cantons, and the whole fraternity feels that a shade is cast over the profession, when an acknowledged member of their society abandons the system of cultivating from the cutting, and commences an establishment of his vineyard from the rooted vine.

To the rooted plant introduced among us from abroad, it may be difficult to afford an attention so minute, but the deepest may be obviated by a practised observation of the habits of the plant, as the former aspect, where the vine is not old

is indicated by the appearance of the bark, and strength, and number of the offsets, which are generally more vigorous on the southern side.

If, in considering the aptitude of the different sections of our country, to the cultivation of the foreign vine, any tenable analogy could be deduced, I should believe, that of the vines to be introduced among us from abroad, those of the Rhine and of France, north of Lyons, should be cultivated in Pennsylvania and the States north of the Hudson. The vines of southern France, Spain, and Italy, in the Carolinas and the States south of them.

Such is the summer temperature of Pennsylvania, that there is strong reason to believe we should also succeed with those less hardy vines of the south of Europe, Madeira and the islands of the Levant. The vines of Switzerland strongly induce a cultivation in our northern States, where, from the length and heats of summer, there may be anticipated great improvement in the productions and vintage, as the vine is hardy and rugged, enduring from habit the vicissitudes of a capricious climate, and deriving but little benefit from a cheering summer's sun.

It is true, that the occasional mid day heats of the country are of sufficient temperature whilst they last, for the habits of the vine, but these are generally of short duration, and continue during a brief period, whilst in their warmest weather the nights are uniformly cold, chilling the atmosphere with an inhospitable influence, which neutralizes the advantages, which the vine would otherwise receive from a cheering warmth.

Most of us are probably aware, that among our South American neighbours, the cultivation of the vine, until lately, received but little attention. Spain, in her jealous regard for the interests of her home dominions, reserved to herself the supply of her colonial subjects, and the vine, as I understand, was discouraged by the ruling powers. The fashion of the times, however, passeth away. South America has changed masters, and the change has introduced to the country a new cultivation. The vine has within a few years received the attention of the agriculturalist, and the patronage of government, and begins already to constitute an important feature of their agriculture. It may not be foreign to our subject to consider the progress of vine growing in that country. It was my fortune at Paris in 1833, to meet at that court, the representatives of Chili and Mexico, from both of whom I received the most favourable details of the culture of the two countries. It appears that in Chili, the vine produced a full crop in the seventh year, though the vineyard ripened its fruit to a small extent before that period. The wines of Chili, are the Sherry of Spain, and the Bordeaux and Burgundy of France. Those of Mexico, where the cultivation is even better than that of Chili, are the Sherry also, of Spain, and the Burgundy. The most sanguine anticipations are entertained in Mexico of this culture, and as the full capabilities of the soil are not developed, they are eliciting every season new facts, and suggesting important theories, and confidently believe that but few years will elapse before they shall add a

new and profitable export to the commercial intercourse with their neighbours. In the cultivation of all the stranger plants, it will hardly be fair for us to expect the same immediate success that has attended the cultivation of our southern neighbours, as they have a better climate for the object than we, or at least that may prove the case; though the fact is yet undetermined. If such should prove the result, it then becomes incumbent on us to take a useful lesson from the Swiss vigneron, and copy the example of patience, in which, sure of the issue, he goes on from season to season, cultivating the shoots of the preceding year, until they have passed the proper period, which justifies the introduction of them into the vineyard. Both Mexico and Chili have commenced a cultivation from the seed. The effect is yet to be determined, though the highest hopes are entertained of the embryo cultivation. This is a culture that may open to us a fruitful source of experiment. By this means, almost every vine in the globe is in some degree at command, and at little cost. The dried fruits of Spain, the little sweet grape of Smyrna, are at our doors, and may be procured at almost every little village of the country, and as such fruits are in general dried by the heat of the sun, the seeds are not injured, or their powers of vegetation destroyed. It has been objected against this cultivation, that the seeding requires a long time before it reaches maturity, and a continued vigilance as it slowly unfolds its powers to the eye of the anxious planter. But the apple does the same. I have cultivated to maturity the

seedling grape, and my own experience confirms the theory, that a longer time in general does not intervene between the planting of the seed and the earliest production of the seedling vine, than succeeds the planting of the young orchard, and the period at which it gives to the farmer the first return for his patient care. It appears, therefore, but a fair hypothesis, that success may attend a cultivation from the seed, as the plant will have birth in the soil, will be nurtured under the influence of a native sky, and advance towards maturity at a progressive pace with the sure aptitude which nature gives to her children, of accommodating to the circumstances by which they are surrounded. It is objected to the seedling, that reliance cannot be had that it will produce the same fruit, as that of the plant from which it was taken. This cannot be controverted; but it has its favourable view of the counterpoise. It is perfectly familiar to us, that the fruit thus produced, may be so changed during the blossoming of the vine, by the mixture of farina, with that of a neighbouring plant, at the same time in flower, that the seedling of such grape may produce a different fruit. This is assuredly true. But does it follow that such fruit shall be inferior? It may produce better fruit, affording a better wine, and at all rates, a new variety, an offspring from the fruitful source of nature, from which we constantly see the extension of her vegetable dominions. To such accidental source, for example, do we owe the Seckel Pear, and it may be questioned, whether any member of the family can surpass in the delicacy

of its flavour the exquisite aroma of this freak of nature. It appears as though she gives us occasionally such an evidence of her exhaustless resources to cheer the pride of the horticulturalist, and cast into the shade the most laboured efforts of his art. In Europe, where for centuries the vine has constituted a prominent feature of agriculture, the same necessity for experiment does not exist. The influence of each climate, the effects of different exposures, and the vintage, are in a measure anticipated, and general results foreseen. Occasionally, however, some amateur, some enthusiast in the cultivation of the vine, produces a new variety, which, if esteemed, is eagerly sought by the neighbouring vine dresser. The mass, however, of cultivators, who, from a want of pecuniary resource, to indulge in untried experiment, or an absence of that public spirit which promotes the sacrifice of present interest to their own, or the public good, prefer to tread the beaten path, and manage their vines as their fathers have done before them.

But in every land are aspiring minds, ambitious of fame or of wealth, who leave the travelled highway, and seek the gratification of their restless desires in the pursuit of their favourite theories. Our own country furnishes a striking illustration of this fact. While we were pursuing the systems familiar among us, navigating the waters by the aid of the capricious elements, one active spirit toiled among theories, rejecting this as a better suggestion to a comprehensive mind, labouring amidst models and machines, successively cast aside to give place to the amend-

ments of a boundless ingenuity, till by the light of the midnight lamp, was born that offspring of philosophy and mechanics, which overturns in its course the wisdom of ages, sets at naught the elements which so long have controlled us, laughs at the tide, and derides the opposing winds.

To a spirit like this, we shall probably owe much of our knowledge of the vine, as an American cultivation. A half century of independence has probably changed the position of our country. Her aspect is not the same. Her institutions keep pace with the advancement of knowledge. Mechanics are revolutionized; agriculture changed. Where, fifty years ago, were our manufactures? How long is it since, for the common purposes of domestic life, we have imported our cotton from a foreign land? With both how stands now the account? The triumph of mind over matter, the multiplied powers of labour-saving machinery, have extended the dominions of England, and given her an empire on which her sun knows no decline, where the last evening ray falls on the plains of Abraham, as the beam of morning is reflected by the surface of the Ganges. Have we no part in this? In the transportation of the raw material, the highway of nations is whitened by the canvass of our commerce, and the looms of Manchester acknowledge a dependence on the labours of our southern brethren. Every year lessens our dependence on the late mother country; and in the new republics of the south, our cotton fabrics, which are but of yesterday, exercise a dangerous

rivalry to the products of British skill. Could we but look fifty years into futurity, it might be seen, that of the various wines afforded by our genial soils, the multiplied aspects available to us, many may take a distinguished rank among the cherished productions of the European vine. It may exercise a more salutary influence. In our land may be seen the substitution of native wines, in place of those ardent spirits of native and foreign growth, whose deleterious effects tend to poison the springs of individual happiness, and dry up the sources of public virtue.

To the agriculturalist who has not given the subject a practical attention, a deep surprise will be excited, on learning the profitable results of the cultivation, and the great returns of a single acre of well managed vine lands. If we except the sugar cane of Louisiana, I doubt if any crop in our country, not the cotton or tobacco of the south, will so bountifully repay the labours of the planter as the cultivation of the vine. Should the attempt be considered, as mere experiment, be it so. The possible result fully justifies the exercise of legislative patronage. It offers to the former, as a strong inducement, the experience of most prosperous agricultural states of Europe, and chides us for pouring into the coffers of the stranger the wealth which should be more judiciously employed in developing our own internal resources. It reflects on our national sagacity for swelling the value of the European vine grounds at the expense of our landed proprietor, and robbing the American cultivator of a prolific source of profitable agriculture. To the latter

an aspect is presented which promises a more favourable result, than hundreds of speculations annually afloat, through the enterprize of our commercial citizens.

It is not the planter alone to whom it is available; the successful merchant who retreats from the toilsome hazards of the commercial lottery, may secure in the cultivation an agreeable occupation of his leisure hours. The landholder will find that his acres will be greatly enhanced in value, and attain in the sale a price which no other cultivation would give them.

These are among the probable advantages presented to us in an individual view of the subject. How does it appear to the patriot and philanthropist? Intemperance is the vice of this land. Our hospitals testify it; for drunkenness is fruitful of disease. The records of our prisons prove it; for 'tis the leprosy whose offspring is crime; an attainted race, with no inheritance but the poor house, no refuge but the jail. If we can exclude from the social compact the host of poisons, which, in the form of whiskey and rum, and the interminable variety in which the intoxicating liquors assail the infirmity of our nature, the pecuniary gain will fade in the calculation before the moral influence. Hundreds of families, whose hard earnings are wasted in vicious excess, will raise their glad hosannas at the change, and unconscious innocence bear witness to the improvement, which banishes poverty and discord from the dwelling, and restores peace to the borders, and plenty to the habitation. Our workmen will be better husbands, fathers, mem-

bers of the civil community. The sum of labour restored to the national wealth, is worth a statesman's study. I have passed three years in France, where I never saw a drunken Frenchman. Eighteen months in Italy, and in that time, not an Italian intoxicated. Nearly two years in Switzerland, of which I cannot say the same, but I can safely aver, that during that period, I did not see twenty drunken men; and whenever my feelings were pained at beholding a prostration so sad over better principles, it was invariably on an occasion of extraordinary festivity.

The Swiss are by no means an intemperate people, nor is it, so far as I have seen, the character of any vine growing country. In the arguments, therefore, which may fairly be urged in favour of a cultivation of the vine, a strongly inciting motive addresses our personal interest, and invites us to adopt a system by which our revenues will be increased, and agriculture improved. There is yet a more important light in which it appeals to our public spirit, and our better principles as a Christian community—the moral improvement of society. That we are not indifferent to this important view of it, is manifest from the numerous philanthropic institutions, both public and private, with which our country abounds. Juvenile indiscretion, seduced from the paths of rectitude, by temptation or inexperience, is plucked as a brand from the burning, and before it sinks into crime, restored to usefulness and virtue, by the system of “refuge.” The discipline of our houses of correction, shows that

the reformation of the offender, the prevention rather than the punishment of crime, actuates the benevolent legislator.

Age is robbed of its infirmity by asylums for the destitute widow, where the song of gratitude ascends to Him who has promised that "the righteous shall not be forsaken, nor his seed left to beg their bread."

The shafts of disease are averted by our hospitals; blindness and deafness are stripped of half their ills, and a race of unfortunates, doomed to a life of moral darkness, enjoy the charms of cultivation.

The happiest commentary on a benevolent precept, is afforded by the orphan asylum; and on the foundation where the truest benevolence laid the corner stone, charity has raised her chaste and beautiful temple, where helpless innocence is reared and protected, and, by a course of sound instruction, fitted for the duties of life.

Societies for the promotion of that first of virtues, Temperance, are established throughout the land, but the principal sinew of their operations is unstrung.

The cultivation of the vine will do more towards the furtherance of their object, than a host of non-consuming resolutions. On all efforts, shall legislators look with indifference, and withhold from the moral improvement of the community the aid so liberally granted to railways and canals, and sectional improvements? We hope otherwise, and that the fostering hand of government, in aid of the numerous associa-

tions for ameliorating the condition of man, will be extended to the cultivation of the vine.

To the system that shall banish intemperance from our land, will be justly due a conspicuous rank among the improvements of the age. It is from this cultivation that we can confidently hope such a blessing, a blessing which shall infuse throughout the land a life giving energy, and imbue with the happiest influence the moral atmosphere that surrounds us, an influence (to borrow the language of a distinguished historian) "more salutary than that which the vestals of Numa derived from the sacred fount of Egeria, when they drew from it the mystic waters, with which they sprinkled their sanctuary."

THE  
MANUAL  
OF  
THE SWISS VIGNERON

AS ADOPTED AND RECOMMENDED BY THE  
AGRICULTURAL SOCIETIES

OF  
GENEVA AND BERNE.

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BY  
MONSIEUR BRUN CHAPPUIS.



## ADVERTISEMENT.

THE same motives that induced the editor of the "Bulletin of Agriculture" to insert in his periodical journal the treatise of Mr. Brun Chapuis, of Vevay, on the cultivation of the vine, have induced the "Committee on agriculture of the Society of Arts," to republish the same, to be distributed among the members of the class, and those of the three societies for the cultivation of the vine in our Canton, (Geneva) with the view to circulate it, through their agency, among our vine dressers generally.

It is not the expectation of the society, that each different process shall be adopted without due reflection. They are aware that it contains some points on which intelligent cultivators may differ in opinion. Such, for example, is the important feature of pruning, the most experienced vigneron of the coast, and of our Canton, preferring the "willow head\*," a system which Mr. Brun utterly condemns. If, like him, every cultivator should devote a part of his time, however small, to useful experiment, the question in a few years would be decided by the results developed.

This little work contains, however, within a

\* The willow head, that is, the method pursued generally by the vinegrowers of Italy, allowing the branches to shoot to the extent of twenty feet, or more, and trailing them from tree to tree.—TRANSLATOR.

brief compass, such important and useful instructions and details on the daily work and care necessary to a successful cultivation, and above all on the entire importance of preserving the vineyard constantly free of noxious weeds, that we shall consider it a great point in favour of the vine, should it become the manual, not only of the practical vine dresser, but of the intelligent proprietor of our Canton, who will find in the unadorned directions it contains, the most efficient practical instructions on the pursuit in which he is engaged.

Whence indeed should we hope for a better system of culture than from among the masters of the art in a small country, which, with an extent of but four or five leagues in length, and in some parts of it, even less than the breadth of half a league, we find that of all the countries of Europe, the vine has attained the highest degree of perfection, where a skilful cultivator has produced on a given space the greatest quantity of fruit, and when a soil possessing from nature but little fertility, has acquired for the purposes of cultivation, the greatest possible value that could be given to it.

### NOTE BY THE SOCIETY.

This little Treatise is taken literally from the excellent "Journal of Practical Agriculture" of the Canton of Vaud. It is from the pen of one of the most intelligent practical cultivators of Vaud, in which Canton, the vine, probably, is cultivated as successfully, and with as much care, as in any part of Switzerland. We will add, moreover, that the vineyard of Mr. Brun is among all others of the Canton pre-eminent for its beauty, its perfect cleanliness, and the great abundance of its product.

This little work appears to us so complete, so practically efficient, and above all, possessing such a fund of useful instruction, at a moment when many of our proprietors are occupied with the preliminary arrangements of replanting their vinegrounds, that we think we cannot present to the public a more acceptable offering than this republication of a system of vine dressing, tending so highly to the promotion of individual interest, as well as the advancement of general prosperity.



## INTRODUCTION

OF

MR. BRUN CHAPPUIS, OF VEVEY.

Influenced by an ardent desire to attain a perfect knowledge of the cultivation of the vine, and believing no guide so sure as that of experience, I have, for several years, employed my time in a succession of experiments on the vineyard. I have observed with regret the unfavorable method adopted by many practical vine growers of my neighbourhood, and the absence of system in the arrangement of distributing and executing the labours of the cultivation. As I know of no elementary treatise to aid me in the prosecution of my labours, it has long been my habit to record the points of interest developed in the suite of cultivation, a reference to which has frequently assisted me after the incidents themselves had faded from memory. I have been frequently solicited by friends, for whom I have the highest respect, to communicate to them the results of my experiments; and yielding to their flattering invitation, I have determined to retouch the memoranda, and give to the light of day the notes originally intended solely for the government and direction of my own vine grounds. Let it not be forgotten that these remarks, the result of many years of patient and untiring investigation, are given by a proprietary

cultivator to his brethren of the same profession, who are best able to understand the feelings by which they are dictated, and who, in the practical details communicated, may find a sufficient compensation for the unpretending garb in which they are presented. Here they will find neither the language of science, nor the flowers of literature. Such are unknown to the writer, who in communicating the result of long experience, has adopted the terms most familiar to the vine dresser, and which he hopes will not be unintelligible to the general reader.

TREATISE  
ON THE  
CULTIVATION OF THE VINE.

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ARTICLE I.

*Preparation of the soil for the Vineyard.*

THE cultivator of an old vineyard, whose intention it is to eradicate his vines, with the design of introducing on the same site a new plantation, should, the preceding year, prune; with that view, leaving the branches double the ordinary length, that he may obtain thereby a larger crop, than it would be safe to allow the vines to produce under ordinary circumstances. He must, this season, manure heavily his intended vine grounds. Previously to taking up the old plants, he must open a trench of two or three feet in depth, according to the nature of the soil in which he intends to plant, and in the operation care must be taken to place the broken or pulverized surface, that in the digging has become

soft and mellow, and which in the preceding years has been well manured, at the bottom of the trench, the sterile earth from which must be placed on the surface.

The manured rich soil thus deposited at the bottom of the trench, affords to the fibrous roots of the plant those nutritious juices, that enter so largely into the principles of vegetation, and greatly promote the growth of the young vine. They also contribute to a duration that cannot be expected without this salutary precaution.

The meagre soil from the bottom of the trench thus placed on the surface, prevents the vine from pushing its roots too high, and does not allow the increase of the numerous parasitic plants which spring from too rich a surface, and choke the young vine before it has acquired sufficient strength to make head against such a formidable competition. This work should be performed during a dry time in autumn; or early in the spring, in order that the earth should have time to settle around the roots of the plant. In replacing the earth from the trench, care should be taken so to fill it, as to leave no vacuum, or space, which is prejudicial to the roots of the young plant, as the fibrous radicles, when thus interrupted, perish in the vacancy from want of soil. Attention should also be given that no person walk on the newly worked ground, as it is necessary to the growth of the young plant, that the ground on which it stands should be kept soft and mellow. A few days after the planting of the slips or cuttings, it will be advisable to observe that there are no inequalities on

the surface of the ground ; and if such should be found, the soil must be carefully levelled. The vines of an old plantation must on no account be eradicated during moist or rainy weather, particularly where the soil is close, or argillaceous. The same inconvenience is not so much to be feared when the soil of the vineyard is a gravel or light sand.

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## ARTICLE II.

*Choice of the cuttings, and precautions necessary, up to the time of planting.*

Some short time before the vintage, which in Switzerland is about the second week in October, we should visit the vineyards from which the cuttings to be cultivated the succeeding season, are to be taken.

The vineyard should not be too old, nor should the plants be too young. To be more definite, however, I observe, that I prefer to take my slips from vines that are between eight and sixteen years old, and from the vines of a soil neither too light nor too loose.

We should select in the vineyard, those vines that have come from strong vigorous cuttings, and that we may not be mistaken in the plants, whose foliage, as well as branches, may indicate a healthy vigour, it will be advisable, while the leaf is yet on the vine, to mark the stocks from

which we design to take the cuttings, a preference to be given, in the selection, to those branches which have afforded the best fruit and blossoms. This may be easily known, when the vine is charged with its product. I think also the small yellow grape should be preferred,\* as well for the quantity of its product as for the quality of its vine. The cuttings should be taken from the plant before the circulation of the sap. On the same, or at furthest, the succeeding day, on which they shall be cut, they should be neatly trimmed and tied up in small bundles, placed in a cellar, or other damp situation, and sprinkled with water twice a week. Four days previously to the planting, I recommend that they should be plunged into clear water, submerged at the depth of four inches; and immediately before they are placed in the ground, the two ends should be cut obliquely with great care, so as to expose a smooth surface, an operation called by the Swiss vine dresser, "refreshing the cuttings." By this means the sound pith is exposed, the surface cut away having become black, an indication of decay.

Some cultivators injudiciously suffer the cuttings to remain too long a time in water, a habit extremely pernicious, and productive of much mischief.

When the pith becomes saturated with moisture, the vegetation is too florid, which prematurely exhausts the plant, and causes the vine, should

\* The American cultivator will recollect, that this advice is given to the Swiss vine dresser. The grape here recommended, being that which best endures the Swiss climate.—TRANS.

the season be dry, to perish. I have found that this inconvenience rarely succeeds the method here recommended. In taking the cuttings from a vine too young, we incur the danger of having defective plants, as the vines will be too porous. If from a vine too old, the reverse is to be apprehended, they will not be sufficiently so, the wood will be too close and stubborn, vegetation proceeds sluggishly and with difficulty, and the plants do not generally prosper, however unremitting the care bestowed on them.

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### ARTICLE III.

#### *Method of planting the cuttings.*

There are some vine dressers who plant their cuttings with a *Fossoir*,\* in a trench, covering them with earth to the depth of six inches with a *Plantoir Picquet*.†

Some vine dressers prefer the rooted plants, which they place at the depth of eighteen inches, whilst those who prefer the cuttings, plant at the depth of eight inches. There are those also who pack or tread the earth so tightly around the cut-

\* I have been compelled to adopt these technical terms, because we have no such instrument in our agriculture as the *Fossoir*, which is, as the name denotes, the instrument used in planting in a trench.—TRANS.

† Resembling our crow bar.—TRANS.

ting, that it cannot without difficulty be drawn out by the hand; others fill the hole in which the slip is planted, with dust or finely pulverized earth.

After different experiments of all these methods, I find that the cuttings planted in trenches usually succeed. But this manner is tedious, as well as laborious, if, in the planting, the necessary order and regularity be preserved. Another inconvenience attending this method, is the difficulty of the laying of the young plants, where this operation becomes from circumstances advisable. I admit the preference due to the method of planting with the *plantoir*, if attended with the necessary precautions. Planting the rooted vines is, in my opinion, the worst possible method, unless it be in a soil in which the cuttings vegetate with difficulty. It is true that the rooted plant takes more easily to the soil, than the cutting, but in my experience such plants are sooner exhausted, acquiring, even more slowly than the cuttings, their ultimate size and maturity. If the cutting be not planted the proper or sufficient depth, it is liable to injury from the operations of the spade or hoe, and also from the drought of a hot season. If, on the contrary, the planting be too deep, success may be doubtful, the sun having but little power to warm the roots of the plant, except in seasons remarkably hot and dry, and whereas, should the first summer prove at all moist or rainy, but little hope can be entertained of a successful vegetation. From my own experience I should say, that in level ground, by the which I mean, in a vineyard, the site of

which is a plain, cuttings should be planted at the depth of ten inches, and from twelve to fourteen inches, where the vineyard was to occupy the inclination of a hill.

I have also observed that serious inconvenience arises from packing or treading the earth too closely around the foot of the plant, as the first roots are fibrous and delicate, easily injured by slight causes, and experience great difficulty in pushing their way through the hard ungenial soil, thus opposing their passage.

Those who fill the hole around the cutting with dust, or pulverized earth, can hardly flatter themselves with success, as the rains after such planting usually pack the soil so close around the plant, as to crowd up the roots and prevent their extension on either side. The method appearing to me to offer the most advantages is, immediately after placing the cutting a proper depth in the ground, to fill up the hole with carefully worked mellow earth, letting it fall lightly around the foot of the cutting, till the hole be half full, then pouring over it a little water, which will dissolve the fine earth, in such a manner, as to cause it to adhere closely to the cutting, and allow no vacant space near it, an inconvenience prejudicial to the plant, that sometimes attends the other mode of planting. The loose soil allows the roots to push freely, and if the planting should be succeeded by a dry season, the cuttings suffer less by this than by any other manner. But should the planting be succeeded by continued rains, the cuttings are liable to suffer much, and perhaps to perish altogether. Monsieur

Andeoud lost in his fine plantation many fine cuttings from having thus watered them. The best method of planting appears to me to be with the instrument of this Canton, imagined and devised expressly for the purpose, and which may be seen in the possession of several experienced proprietors, who take great pleasure in showing these instruments to strangers.\* The hole made by the Vaudois instrument must be half filled around the cutting with earth; the use of this instrument is attended with many favourable results, and has no disadvantages as a counterpoise. Attention must from time to time be given to the cutting, heaping in fresh earth, as that around the young plant shall settle, but this latter failing, for the reasons already given, must be of poor meagre soil. The top of the hole nearest the surface, to the depth perhaps of six inches, should on no account be rich or fertile, as the young vine would be greatly injured thereby. The planting of the cuttings should not be in too dry a time, for fear of causing the earth to pack too closely around the plant, diminishing the chances of success, and at all events opposing serious difficulty to the free passage of the delicate fibrous roots, as they push the first shoots. The regularity and design of the vineyard is important. I should recommend that

\* Having never seen the instrument here mentioned, I cannot speak positively as to the form of it. From the description of it, I am somewhat inclined to think it is like the common auger of our house carpenters, which perforates the soil, discharging the loose earth disengaged in turning, making a hole nine or ten inches in diameter.—TRANSLATOR.

the ground be stacked, or divided into regular lines, crossing each other at intersections that should divide the field in the manner of the checquer board, the plots thus formed to be two and a half feet square.

This will give a regularity to the appearance of the vineyard, heightening greatly the beauty of the *coup d'oeil*, when the vines shall arrive at maturity.

Neatness and symmetry are always valued by the cultivator of taste, but apart from the gratification of the fancy, a great practical advantage is obtained by such regularity, as the vines incur less hazard of injury in the operations of weeding and digging, and admit more readily the rays of the sun to reach every part of the vine grounds, thus preventing much of the fruit from premature decay, a misfortune to which the vineyard is exposed when the grapes are much shaded.

The highly favourable influence of the sun on the quality of the wine, as well as the quality of the product, manifests the great importance of such regularity, and proves the decided superiority of the present system of cultivation over the confused and slovenly disorder in which our old plantations have been crowded together. This distance between the vines I consider as the most judicious, for should greater space be left, the full crop of which the ground is capable will not be obtained from the vineyard.\* In a

\* Let it not be forgotten, that our author here speaks of Switzerland, "where every rood of ground supports a man," With us it is different, and a greater space may be safely and advantageously left.—TRANSLATOR.

heavy rich soil, where the growth of the plant is rapid, and the branches become strong and extended to a great length, I have found the most judicious distance between the plants to be three feet square.

In order to insure the success of the plantation, and replace the cuttings which may fail of taking to the soil, it will be advisable to plant out a few supernumerary cuttings in a favourable corner of the vineyard, (and here let me remark the importance that these should be put out in a part of the same field) in order that in the succeeding season of planting, those cuttings which have failed in the vineyard should be replaced from the young nursery, selecting of course the most vigorous and healthy, to give to the plantation an uniform appearance as to age and production. There are some vigneron, who, instead of the nursery system, put out an intermediate line of cuttings, between those intended as the stock plantations, and where any of the stock plants fail, the place of the unsuccessful cutting is supplied by laying a branch from the supernumerary which has the advantage of the rooted vine, and a season consequently is gained in the establishment. This method appears judicious, but care must be taken the second year to eradicate such intermediate plants, where the principle or stock plants have succeeded, and show a vigorous vegetation. In those of the latter, which draw up in a sickly growth, this method is also to be recommended, and the evil counteracted by replacing the feeble plant, from the branch of a strong adjacent supernumerary. The outset of

the establishment requires care and attention; as it is all important to the success of the vineyard, that a strong healthy plantation should form the groundwork of the operations. It is the creed of many of our vine dressers, that the young plants should not be weeded, (*faire la feuille*) which is to divest them of their superfluous leaves, and young branches, the first year.

I am quite of a different opinion, and from experience, do not hesitate to say, that, on the contrary, the stripping should not be omitted where the young plants shoot freely, and show a vigorous vegetation. In this operation, my opinion is, that not more than two shoots, or bunches, should be left, instead of four or five, as is the practice among some ignorant cultivators, surcharging thereby the plant with a vegetation, to the support of which its powers are inadequate, and exhausting the life blood of the young vine, by a premature tax on the functions of the young plant. In autumn we should divest the vines of the small shoots that have put forth between the main branches, which are to form the heading of the plants the succeeding year. Even after the leaf has fallen, this measure contributes to mature and harden the young wood, which is essential to success, because the young shoots would not be sufficiently advanced, and the new wood matured and ripened before the severe frosts of winter, many of the branches that appear to possess a vigorous maturity, will perish, from inability to resist the rigors of the season.\*

\* From my observation on the effect of pruning, I incline to the belief, that in Pennsylvania it will be judicious that this

Each principal branch should be supported by a prop or stake, as from the wind, or even its own weight, it will be exposed to be broken off from the main stock. Early in the ensuing spring, before the flow of the sap, the vine should be pruned, as great injury to the plant will result from a loss of this precious fluid, where the work of pruning is postponed too late in the season.\* The vinegrounds should be carefully prepared with the plough or spade, early in the season, before the buds begin to enlarge or swell, the vine securely attached by a ligature of straw or matting to the support or stake, the matting, if to be procured, is not liable to contraction and expansion from change of temperature, or the alterations of dry and moist weather, from which an injury is sometimes inflicted on the tender branches as they expand, preventing the free circulation of the sap, and not unfrequently so pinching them as to cut through the young skin or bark of the plant.† As soon as the shoots

work should be completely finished about the middle of February, in order that the wounded part of the vine may have time to allow the sap vessels to close before the circulation shall be active.—TRANS.

\* In the vineyards of the Rhine, the vines are in the autumn entirely buried to the depth of eighteen inches, or thereabout, and the appearance of a vineyard is that of a ploughed field.—TRANSLATOR.

† Wisps of straw are used for this purpose where the matting cannot be obtained, though, should the season be rainy, decay will take place, and cause a fermentation that may act unfavourably on the young branches; moreover, in our country, straw furnishes a harbour for insects, where the egg is deposited, and the young brood hatched, which feed on the fluid, and thus rob the vine of its vital principle and most active support.—

TRANSLATOR.

shall have attained the length of three or four inches, the first stripping should be made, selecting from among them those which are to be left to form the branches; or, in the technical language of the vine dresser, the "oars" of the plant, leaving two, three, or at most four oars, according to the strength and vigor of the vine. The year succeeding the planting of the cuttings, and also the two seasons succeeding that, the ground should be frequently and carefully worked, keeping the soil around the young vines soft and mellow, and above all free of weeds. From time to time, attention should be given to the plants as they push their foilage, detaching the small shoots as they appear among the main branches, (*nettoyer les rabais*); and this should not be done too early, for where the operation is performed thus injudiciously out of season, it has a prejudicial influence, accelerating the growth of the plant, and causing the wood to ripen too soon, from which circumstance it is often spongy, and does not attain the proper consistency or solidity.

The best manner in which to perform this work, is to pinch off the supernumerary branches. The following spring the vines must be carefully pruned. Should the mercury of Reaumur be below zero, 32 degrees of Fahrenheit, I should defer the operation for a few days; but a dry cold at the freezing point will not injure the plant where it has been cut. In the pruning this season (the third year from the planting of the cutting) three small branches may be left to each vine, which should be cut very short, leaving

only two buttons, or buds on each. The stronger branches, or oars, must be carefully raised, and after pruning, be securely attached to the stake or support. These latter may be so pruned as to leave five, six or seven buttons to each, according to the strength and vigor of the branch. The habit prevailing among some of the vigneron of this Canton, (Vaud), of manuring the vineyard the first and second year, is in my opinion prejudicial to the plants, as the effect of thus forcing at too early a period the vegetation of the vines is to accelerate an undue growth, causing it to push its roots too near the surface of the ground, besides engendering a host of parasitic plants that infest the vineyard at the expense of the young plantation.

Sufficient nourishment is afforded to the roots of the young plants from the manured soil at the bottom of the trench, and should the superior surface of the soil be as strong as that below, the vegetation will be so rapid, that the vine incurs a danger from too much kindness, and is exposed to perish, as it were, from plethora.

The vineyard should not be manured before the fourth or fifth year from the planting of the cuttings, and the application of the manure must be regulated by the nature of the soil, and depth of the plants. A strong or loamy soil, for example, should not be manured so early as a soil of light sand or gravel, as, in the former, besides the great injury inflicted on the young vines from the parasitic plants that in such endless variety succeed the application of the manure, the vegetation of the young vines is so forced as to pro-

duce prematurely a superabundant crop of fruit, seriously injurious to the vineyard, exhausting its vigor, and taxing its powers before it has acquired sufficient strength to bear such imposition. This greatly retards the growth of the vine, preventing the attainment of the force and vigor essential to a prosperous vineyard, diminishing, for several succeeding years, the quantity of the fruit, and so changing the quality of the grapes, as to render the wine greatly inferior to that which, under judicious culture, it would otherwise be.

We frequently see the young vine that has been immaturity charged with fruit, languish and droop for two or three years, and sometimes perish the second season. The weeding of the young plantation should be performed the first year by a skilful vine dresser, and care should be taken in stripping the vines, to leave the proper shoots adapted to form the stock branches of the future plant. In the second or third year, the vines should be stripped or weeded in rows, from left to right, and *vice versa*, taking them in turns, one by one, that none be overlooked, after which the parasitic plants should be carefully extirpated, or rubbed off the vines with a stiff scrubbing brush; in doing which, without great attention, there is danger of chaffing or wounding the bark of the vine, by which serious mischief is inflicted on the plant.

Early in the fourth season, the strong branches or oars, should be tied up, and firmly secured to the stakes, as the weight of the oars, when in foliage, will expose them to be broken off by

high winds, unless properly secured against such accidents. Before the vine pushes into leaf, each stake should be examined as from decay or other causes, should the prop be weakened, and not sufficiently driven into the ground, it may be unable to sustain the weight when the plant shall be in full foliage.

Should the wines be prostrated by the high winds, to which our summer is so peculiarly liable, the product of that year will inevitably be destroyed, and the vine itself seriously injured. The height of the stock or vine from the main trunk, should not be less than six inches. Short pruning exposes the branch to injury in working in the vineyard, and the frost will inflict a greater damage, than where the branches are longer and more elevated.

The grapes growing near the ground are exposed to premature decay, as well as to the attacks of insects, whilst, on the contrary, those that are at too great an elevation, do not produce in such abundance, and give a wine of greatly inferior quality. The parasitic plants must not be pulled with force, or dragged off with the hand, but carefully separated by cutting the roots with a sharp instrument, or, as before mentioned, rubbed off with the scrubbing brush. In planting the cuttings, I have ever found the period to be most favourable as the vine begins to swell, and is about to burst into leaf, as the ground about that time is warm, and has sufficient moisture to favour the vegetation. Care should be taken to examine each bud on the cutting, after it has been planted a week or two; and should any one

of the cuttings appear inert, and afford no indication of pushing into leaf, all the buds or buttons should be rubbed off, except the first above the ground, around which bud loose earth should be gathered, so as to leave the button on an even line with surface of the soil, or as a seaman would explain it, "between wind and water." By this means many of the cuttings will be saved, which without such precaution would inevitably perish.

There are many vine dressers, who against a wall\* plant double the usual number of cuttings on a given space, in the hope of gaining a little more ground; but such cultivators do not understand their true interests, as the plants so situated rarely prosper, and give in general, a short meagre production.

There is no good reason why more cuttings should be planted against a wall, than in the open ground, and where it is intended to trail the branches against the wall, either on espaliers, or in the ordinary mode of standard plants, the vine should on no account be nearer to it than eight inches in order to afford free scope on each side for the roots of the plant to push forth and expand, as well as to allow space to soften the ground around it. Those plants for which we design such protection, should be of a kind that ripen their fruit at a later period of the season than the fruit of the field cultivation, because if

\* In Switzerland, it is the custom, in positions where the vineyard is exposed, to erect a wall along the northern line of the vine grounds, planting espalier vines against the southern front.—TRANS.

the wall fruit be the same with that of the field, both will not ripen at the same time. A confusion, as well as an increase of expense in the operations of the vintage, will be the necessary consequence. Such fruit, moreover, being the only grapes ripe at the time, will be more exposed to the ravages of insects, and become the single point against which the attack of the whole tribe will be concentrated. If the vigneron should determine, *bon gré, mal gré*, to cultivate against the wall, the same fruit as in the open field, the branches should be trailed longer and higher, the fruit consequently being more elevated, it may reasonably be hoped, will ripen and be at maturity about the same time as that of the open plantation\*.

\* [The objection urged by some of the cultivators of the Canton of Vaud, against having the different fruits in the vicinity of each other, is that during the blossom of the vine, there will be a mixture of the farina, and the fruit changed thereby. I found the opinion general against the plan of raising different kinds of grapes in the vicinity of each other, and those who are particular in the affairs of the vintage, dislike an admixture of fruit in the same pressing. The reason assigned is, that the fermentation is not the same in all the varieties of the grape, and that where such different fruits are thrown promiscuously into the mashing tub, the fermentation of one part will be entirely finished, whilst that of the other will be in active operation. It is however not uncommon in the Canton, to throw into the general mass, the whole crop, but this is always to economise labour, and is not done in the best wine making districts.]—TRANSLATOR.

## ARTICLE IV.

*Pruning the Vine.*

Should the weather permit, I recommend that this operation be commenced as early as the middle of February, commencing with such as appear precose, and those also the wood of which appears to be feeble. In general, where it is practicable, the pruning should be early. When such is the case, the wounded surface of the branch has time to heal before the active circulation of the sap; a crust, or hardened surface being formed, which closes the orifice of the sap vessels, and prevents the loss of that precious fluid, a measure fraught with the most salutary results, contributing essentially to the health and vigor of the plant, and insuring its favorable and healthy duration. Attention in the pruning should be given to cut as far as possible from the button, in an oblique or slanting direction, in order to carry off the rains and dews from the wounded surface, which should always be on the side opposite to that of the bud. I cannot too strongly recommend to the vine dresser a careful observance of this precaution, as the cutting as remotely as possible from the bud is one of the surest methods of affording to the vine a health-

ful vigor, as without an attention to this important point, the crust formed on the wounded surface, will be so near the button, as greatly to injure the vegetation of it, causing it to push with difficulty, and sometimes destroying altogether the principle of vegetation.

If even the latter should not take place, the wood will not ripen well, and the fruit will be inferior and less abundant. Late pruning is attended with a heavy flow of sap, which greatly exhausts the vine, and frequently shortens the life of the plant. It has been remarked, that when a severe frost has immediately succeeded the first pushing of the bud, those vines that have been pruned late in the season, have been found to suffer least, being the least advanced in vegetation, then again, that sometimes the vines under a late pruning produce that season a larger crop of fruit than many others. But these circumstances, which cannot be attributed to any but an accidental coincidence, should not influence us to abandon the system of early pruning. Many intelligent proprietors of our Canton, particularly those who have given to the cultivation of the vine an attention the most enlightened, having observed that the chances of frost are frequent and injurious to their vines, have adopted the opposite method of late pruning and digging, and notwithstanding that this measure is always attended by a heavy flow of sap, they contend that the loss thus sustained, is less prejudicial to their vines than the injury resulting from our heavy late frosts. Such is not my opinion. I

fear less the ravages of the frosts of April or May, on my vines which have been pruned early in the season.

In pruning, most vigneronns leave four branches to each strong vine, carefully observing that such shall be the most vigorous branches, shooting outwardly from the main trunk, that a clear smooth bark may be thereby obtained, leaving it as far as practicable, unwounded by the knife, because, should the trunk in the course of years be surrounded by the old branches, the buds would vegetate with difficulty and finally perish. I should recommend, however, that where the outer branch is small, and somewhat inferior, it should be chosen rather than the inner shoot, even though the latter possess the advantage of superior force. The habit of pruning from the young branch, so as to form shoots of this year from the branch of the last season, (a method so general among the vine dressers of Vaud) injures the quality and diminishes the quantity of the vintage, and shortens, at the same time, the duration of the plant, which, pruned as it is on all sides, droops and languishes, obliging the vigneron to create a new heading from the false branches, so called, which shoot from the head of the main trunk, producing for the several succeeding years, less abundantly than under the usual pruning, and tending seriously to a shortening of the powers of life.—*Remark by the translator.* [Lest the American cultivator should find a difficulty in comprehending a phraseology so ambiguous as that of the last pa-

ragraph, I shall endeavour to explain from my observations of the culture of the Canton of Vaud, what I believe to be the meaning of the author in the directions thus given. I have seen in that Canton many of the old vineyards so cut down in the spring pruning, as to be divested of every inch of the shoots or branches of the preceding year, thus leaving nothing but the stump or old trunk, the top of which, from long annual pruning in this manner, is terminated with a round ball, from which, indurated as it appeared to me, all the young shoots forming the heading of that year, germinate. Although in the old vineyards of Vaud, this method of pruning may be considered general, there are nevertheless many who have three or four buttons of vigorous branches of the preceding year, from which the fruit bearing heading of that season is formed; and it is this latter system which does not divest the trunk, or old vine, of every particle of the shoots of the preceding year, that I understand the author to discourage.]

In pruning always from the young shoot, you tighten the horns of the trunk, thus forming a round, or globular head, which is attended with this inconvenience, that in a season of great abundance, the bunches of grapes are often brought into contact, not leaving between them, the space necessary to allow the rays of the sun to penetrate, the interior of the plant is also so shaded that the fruit is shut up, and consequently deprived of that degree of heat necessary to mature and ripen it.

The quality of the wine is injured, the vine giving a smaller quantity of fruit, not merely because the grapes do not ripen fully, but because they do not attain the natural size. Here, however, let me observe that all the different varieties of the vine do not require the same method of pruning. The more delicate kinds, for example, should not be the first pruned, nor should they be allowed to bear too abundant a crop. Those of an ordinary kind, such as the small and large "*Rougeasse*," should be the last to be pruned, and on these, instead of leaving four branches, five or six to each trunk may be safely left, the branches thus pruned being raised, and as soon as the work of the vineyard shall permit, securely attached to the supporting stake, which must be done before the swelling of the button, or bud; the ligature to be preferred for the purpose is the bass matting, or should not these be attainable, the slender twigs of the ozier, or yellow willow, usually found here in abundance.

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## ARTICLE V.

### *Transport of the earth or soil.*

THERE are some vine dressers, even in the district of La Vaux, (where, without any doubt, the vines of our Canton have attained their great-

est perfection) who remove the excess of earth accumulated at the foot of the plant by the wash of the mountains, but once in every two or three years. I consider this method as extremely injudicious, because, the earth thus accumulated around the foot of the plant, particularly in the vineyard occupying the inclination of a hill, buries the young branches, leaving, on the contrary, the roots of others uncovered and dangerously exposed.

This is peculiarly the case where the inclination is precipitous, and not unfrequently where it is even gentle, as the heavy rains of summer greatly expose to such inconvenience the gravelly soil of the vineyard.

When the branches are thus partially covered, the vine cannot ripen its fruit; my opinion, therefore, is, that such accumulation should be removed from the foot of the plant every spring, the work to be performed in a dry time, before the vine begins to push into leaf. The trellise vines, ranged against the wall, the roots of which have by the washing of the rains of winter, become uncovered and exposed, should be protected by a fresh covering of soil, around the foot of each plant; the soil around which, should, before the application of the new covering, be carefully broken up and worked, till the whole be left soft and mellow; and should it be necessary to manure them, the manure should be worked at the digging, and not applied superficially, as the inconvenience before mentioned will ensue, that the vine will push its roots near the surface, to the great injury of the plant.

Moreover, such top dressing will be soon exhausted by the action of the sun, besides which it would become the harbour of myriads of insects, ready to attack and feed on the life blood of the vine, and exhaust and wither its force and energy.

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## ARTICLE VI.

*The operation of laying the branches, in order to form a new plant from the rooted vine.*

THIS work should be performed in the spring during a dry time, when the ground has become warmed by the rays of the sun. It is advisable not to defer it too late, as the vine usually begins to swell, and push its buds early in April where the season proves favorable, and as in performing this operation, it frequently happens where the branch is to be laid, issues from the plant near the surface of the ground, it is necessary to cut some of the small roots, which is injurious to the vine from the loss of sap that must ensue. If, moreover, the buds should have begun to swell, the danger of injury is increased, or it may be, of utter ruin to them. The first step of performing this operation, is to open a trench the full length of the branch, sinking the trench at least half a foot below the level, at which it is intend-

ed to lay the branch, which half a foot of extra depth should be filled by the mellow rich soil, taken from the upper or superior surface of the trench, and which should be immediately around the branch laid. This greatly facilitates the developement of the fibrous roots that shoot freely in ground thus prepared for their vegetation. On the other hand, should this precaution be overlooked or neglected, it is greatly to be feared that in a rainy season, and particularly in the vineyard of the plain, the water which falls into the trench being retained by a close or compact soil, cannot pass off, but stagnates around the young roots of the plants, and are greatly detrimental to their advance and prosperity. The languishing which always succeeds such inconvenience, may be generally avoided by sinking the trench to the proper depth, and replacing the earth taken from it, by the loose and porous soil. In replacing the earth, the trench must be only half filled, the earth which remains being placed along the margin of the ditch, in order that from time to time during the season, it may be thrown into the trench, so that by the autumn it may be completely filled, and on a level with the circumjacent ground. It will be recollected, that this additional soil must be the meagre earth from the bottom of the trench, and is always to be placed above, the branch laid. In the spring following, it will be found that the surface of the trench has sunk below the level of the ground adjacent, which defect must be replaced by other earth, and the whole levelled. The first work of the spring must now be attended to. The roots

which the branch has put forth the preceding season must be carefully guarded from injury by the operations of the spade, or other instruments, with which the labour of the vineyard is effected, and every facility afforded to the plant, by keeping the soil around it free and mellow to push additional roots.

The branch that is intended to form the heading of the plant, should be curved so as to form an arch, such circular form being best adapted to afford to the sap a free circulation.

Not more than two points or branches, issuing from the ground, should be allowed to the new plant. The earth around the laid branch should, from time to time, as it may require it, be carefully dug and kept in a mellow state, in a circumference of ten or twelve inches at least. Should the branch you may wish to lay, be too short to reach the spot where the unsuccessful cutting had been planted, so as to range in a line with the other vines, and preserve the uniform appearance of the row, such short branch may nevertheless be used as far as it will extend.

The first season it will probably produce a vigorous branch, which in its turn may again be laid, so as to reach the desired point the following season. As the branches thus laid, produce fruit in great quantity, even the first season, it will for that reason be prudent to leave but two buds to form the heading, as with more than that number the plant will be exposed to the danger of exhaustion from overbearing, and the chief object of the operation, which is to supply

the place of an unsuccessful cutting, will of course be defeated.

Attention in the pruning should also be given to keep down the vigorous shoots of the new plant, so that it shall range uniformly with the adjacent vines.

Early in the succeeding spring, the buds of the young vine should be rubbed off with the thumb and finger, leaving but two or three to form that year's heading, and these must be the highest, or those next to the top of the branch.

When the operation of laying is deferred until too late in the season, the branch has not time to take to the ground before vegetation, and attract the salts of the soil, so important to the nourishment of the former stock plant. I close this article by repeating the importance of great care in laying the branch. Let it not be buried under too deep a covering of earth, particularly where the ground is level or damp.

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## ARTICLE VII.

### *Of the first Labour.*

ABOUT the latter end of March, the first labour is usually given to the vineyard. Sometimes, from the lateness of the season, it is deferred till the commencement of the month of April. It

will be easily perceived, that no definite day nor even week can possibly be fixed for this operation, but the skilful vine dresser is never at a loss on this point. My opinion is, that the moment most favourable to the performance of this work, is that at which the vine begins to burst its buds, and push into foliage; and here I presume it will be superfluous to remark, that though I consider this as the most judicious movement for the performance of the first labour, it calls for great care on the part of the vine dresser, as without strict attention in moving through the grounds, the young and tender buds, at this moment heavily charged with an active circulation, and excessively fragile, will be exposed to great injury, and perhaps broken off and destroyed. In the vineyard of a close and loamy soil, this is the moment at which the first labour is attended with the greatest advantage, as in such a soil the vines worked at an earlier period, rarely prosper as well as when the work is postponed to that which is here recommended, and for this reason, that the cold rains of the latter part of March pack and harden the soil of the vineyard. A distinction in this respect should always be made between the vineyard of such a soil and the sandy or gravelly bottom, or where the vines are on the inclination of a hill, not only on account of the convenience of giving to such the early labour, at a period when the spring business is less imperative, because a positive advantage attends, in such situations, an early labour, by affording to the ground time to settle around the roots of the vines, and preser-

ving the degree of humidity necessary to resist the great heat of such situations, a humidity which, in the early part of the season, promotes the vegetation of the vine grounds, and of which, from the evaporation of a reflected heat, and the facility with which from an open soil, and the descent of the position, the rains and dews are easily carried off. The depth of the digging must be regulated by that of the soil, varying from six to ten inches. In performing the work, I usually give two strokes of the instrument to each vine. By the first blow the earth is turned up, the second raises that which remains at the bottom of the furrow, leaving it of an uniform depth. The method of performing this operation by a single stroke of the hoe, which is the habit of some of the vine dressers of our Cantons, is, in my opinion, injudicious. There are those who neglect this work altogether, which is yet more pernicious in its effects on the vineyard, as under such shameful negligence the vines soon become choked up with noxious weeds, and the difficulty increased of keeping the vine grounds sufficiently clean.

In turning under the surface of the soil to the proper depth, most of the seed of such destructive weeds will be so buried as to be incapable of reproducing. If at the moment of the first labour, the surface of the ground be dry, the result of the work will be more advantageous. Care should be taken, in effecting this work, not to perform it by heavy blows, particularly in the vineyard of the hills, as it is prudent to avoid, as far as possible, causing the loosened earth to roll

towards the bottom. We should also be governed by the state of the weather, as this labour should not be performed in a moist or wet time, nor even when there may be cause to apprehend the approach of rain. Instead of advantage under such circumstances, the result will rather be unfavorable. The vineyard which has received the first labour in a careless manner, should be deep by the drought immediately after the finishing of the work, as without this necessary precaution, the vines assume a yellow tinge, and the production of that season will be diminished in quantity, and of a quality greatly inferior to that of the adjacent vine grounds, in which this important work has been skilfully performed. Those whose habit it is to work the vineyard too late in the season, commit a great error in the cultivation. A vineyard suffered to remain too late, in the condition in which the vine is usually found before the performance of this work, experiences an injurious loss of time, in comparison with those in which the work is performed in proper season. It is deprived of all the salutary influence of the spring sun, and the beneficial effects of early rains; besides which a serious mischief arises from the rapid accumulation of noxious weeds, that all this time will be making head, and acquiring such a force, as will prove during the whole season, destructive to the prosperity of the vineyard. No subsequent labour that can be given to it will repair the consequences of such ill-judged neglect. Moreover, where this work is postponed to a late period of the season, it is never so well performed. The fear

of injury to the blossom of the young fruit, will always deter the vigneron in the performance of his duty, and, as a consequence, the work will at best be but half done, and detected at the first glance by a skilful eye, as the result of a slovenly cultivation. Even when no professional pride on the part of the cultivator urges him to preserve the character of his vine grounds, still this labour, if postponed, must be executed under great disadvantages, as with all the precaution that can be taken, it will be impossible in the performance to avoid inflicting, to greater or less degree, the most serious mischief to the young and tender branches, which at this moment are so fragile, that they will inevitably be broken, to the great suffering of the plant.

The loss of the broken branches, though in itself sufficient to excite the most lively alarm, is but a secondary consideration. An active hemorrhage issues from the wounded surface, which offers to myriads of insects an unprotected point where the attacks are simultaneous, and which soon exhaust the vital principle of vegetation. The superficial roots which have not the proper depth, must now be cut, and not broken off, as a neat clean cut more speedily heals, and exposes the vine to a less loss of sap, than where from the torn and lacerated root, a greater surface will probably be exposed. In some of the communes of this Canton, it is the practice to plant stakes at the time of giving the first labour. In doing this, the workman should be careful to observe that the point of the stake be not decayed, or if so, to break off the unsound wood, and point

the prop afresh. The supporting stake should be planted on one side of the vine, inclining the top in an oblique direction, so as to bring it between the horns of the plant, the inclination, of course, keeping the point of the stake at the greatest allowable distance from the foot of the vine. The stake when set in the ground should be firm and solid, and so strong as to be capable of resisting the winds, to which it will in the course of the season be necessarily exposed. When charged with its full foliage, the vine will be heavy, and it will be prudent to subject each stake of the vineyard to the proper test. To ascertain this important point, let the stake be drawn by the top, from side to side, and if, from the elasticity, it return to its upright position, it may be safely trusted with the support of the plant. In the vineyard of the plain, the stake should be planted perpendicular to the ground, and in that which occupies the side of a hill, it should range with the inclination of the ground, and lean towards the summit of the hill.

## ARTICLE VIII.

ON the subject of this work a few words shall suffice. During several years I have performed this work in my vineyard, which I observe with pleasure has been adopted by several of my neighbours, in consequence of the advantages resulting from it.

Notwithstanding the great experience, which from the extent of the cultivation among us, the vigneron of this Canton unquestionably have, this work, it appears, is much neglected. The method of replanting the vine is generally preferred as the better cultivation, to that of laying the branch of an established plant. The cultivator whose vineyard is old, prefers a renewal of this plantation from the cutting, as this method, among other advantages, offers a better choice both as to the fruit, and the strong healthy slip, circumstances contributing largely to the establishment of the profitable vineyard. The "*dechaussure*" should be performed early in the spring, and should be done with the *Fossoir*.\* It consists in opening the trenches of the preceding year, in which the branch was laid, particularly those of the last year, to examine if the branches laid have pushed their roots too near

\* This instrument resembles in shape the ordinary hoe of our country; but instead of the broad blade, it is two pronged, like the fork of the barn yard. The prongs are four inches apart.—TRANS.

the surface of the ground. If such should be found to be the case, the superficial roots are injurious to the plant and must be carefully cut. This operation, when performed early in the season, is attended with this advantage, that there is not the same wasteful flow of sap from the dismembered roots, as must be the case where the work is postponed till late in the spring. In the performance of this operation, the superfluous buttons should be carefully rubbed off, and at the same time the branch should be so placed as to range in uniformity, as to the height and line with the circumjacent vines.

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## ARTICLE IX.

*Stripping the vines of the superfluous vegetation—raising and tying the branches.*

THE first work of stripping or weeding the vines, consists in detaching the useless shoots, or extra branches. This should not be done till all the grapes or fruit be fairly developed and plainly perceived, at which time the extra foliage will have put forth and formed, the shoots being half a foot in length. The method of stripping or weeding the vines at an early period of the season, is greatly to be preferred to the loose habit of the greater part of the vine dressers of

this Canton, which is to defer the operation to so late, that the branches are generally eighteen inches in length, and have acquired such a length at the expense of the vineyard and the vintage.

It is, however, but fair to observe, that where this work is done at too early a period of the season, a danger is incurred of detaching the shoots best calculated for the fruit bearing branches of the succeeding year, and to form also the effective stock heading of the next season, it being extremely difficult to discriminate thus early, the character of the spring vegetation not being fairly developed. This inconvenience which is certainly to be avoided, is however trifling in comparison to the advantage derived from a performance of the work at a proper period, by the immense importance of the preservation of the circulating fluid, as the sap is the primary source of the prosperity of the vine and its productions.

Let the acute observer make the experiment for himself, and judge from the results. He will see the severe exhaustion of the plants, the stripping of which has been injudiciously performed out of time, and he cannot fail to be struck with the difference between the languishing appearance of such, as contrasted with the exuberant branches and healthful condition of those which have received this work in the early part of the season. I repeat, that the work performed in the spring possesses inappreciable advantages, as at a later period the wound left by the detached branches will be larger, the sap vessels more di-

lated, and the most active circulation will carry off the strength of the vine through the sluices, opened apparently for the destruction of the plant. In performing this operation, two branches or shoots to each horn (by which term the old branch of the preceding year is denoted) should be left at least on those vines having that year produced no fruit.

This must not, however, be understood as applying to those vines in full force and vigor. On such as are older, but which have not as yet that season formed their fruit, four or six shoots may be safely left; but this must only be done at the time when they are raised and tied up with straw, or matting, to secure them to the stakes; because, should this operation be performed before the season of securing the shoots to the stake, the vine will be exposed unnecessarily to the high winds of the spring, to late frosts, hail, or other unforeseen occurrences, from which a serious injury may ensue. Those who adopt this method, should take great care in the choice of the branches left to form the future heading, the general practice with us being to leave those shooting from the outer or exterior surface of the stock, as affording a better exposition of the next years' fruit bearing branches to the action of the sun.

Where the heading is formed from the inner branches, they are so crowded together, that by a dense foliage the fruit is so shaded, as to lose much of the advantage of the sun, which, from a more judicious exposure, might be given to them. As soon as the young branch shall have acquired

the proper length, it should be attached to the stake. This is generally done when the vine is in blossom. In deferring this work too late, a sensible loss or diminution will be a sure result at the gathering, because the grapes which have become a little injured or decayed, being exposed too suddenly to the heat of the sun, weep and discharge their fluid. The grapes thus partially injured should be left perfectly tranquil, or they will not recover their healthy soundness. Those who tie up before the blossom is formed, where the branch is sufficiently long, are not greatly in error, if the fruit of the season be not too abundant, or the weather rainy or very damp. In a season when the fruit is very abundant, the oars, which are usually numerous, being attached to the supporting stakes, tend to keep the grapes too much shaded; in which case the blossom forms and falls with difficulty, causing the loss of a considerable part of the fruit, and exposing that which remains to the ravages of the worm, which attacks more readily the grapes growing in the shade, than those that are exposed to the rays of the sun, particularly in a cool and rainy season. We should not, therefore, prematurely hasten the work of tying up, but wait until the vine is in blossom. The buds thus near the soil, and well exposed to the rays of the sun, expand the blossom more easily, and part with it with greater facility, which does not occur where the vine is attached to the stake, before the season of blossoming.

Whatever has the tendency to retard the falling of the blossom, should be carefully avoided,

because, where the plant retains for a long time its blossom, it is a sure indication that it is not in a thriving condition. The better plan is to observe a just medium in performing this work, which I consider to be about the time the blossom begins fairly and fully to open; but it will be easily perceived that this is a moment requiring an unusual degree of care and attention, as much mischief may be done on the young and tender shoots, by incautiously moving amongst the vines when in flower. This labour should on no account be performed whilst the vines are wet from rain or dew; this must be carefully observed, as by neglecting such a salutary precaution, the chance of losing a part of the seasons' product will be incurred.

Such is more especially the case with the delicate fruits, the small yellow grape, for example.

There are some vine dressers who strip or weed their vines in a most cruel manner. It is much better that the plants should be suffered to retain all their foliage, than to act thus injudiciously, or perform the work without being aware of the consequences to follow the skill, or want of it, under which this important labour shall be executed. To the experienced vine dresser, it is perfectly well known, that the best nourishment of the vine is drawn through the medium of the foliage;\* yet even among us, where the cultivation is so well understood, there are nevertheless

\* The Swiss cultivator considers the foliage as the lungs of the plant, by which it inhales the atmosphere, absorbing the dews thereby.—TRANS.

found some vigneronns so deficient in the knowledge of their profession, as to strip the vines of these necessary agents of their existence, and thereby issue, as it were, against them the irrevocable sentence of death. It is by the practical experience of those who have trod before us this devious way, assisted and improved by our own patient investigation, that will enable us to discriminate under different circumstances, as ultimately to arrive at the system that shall be found adapted to the soil, exposure, and position of each particular vineyard. In the plantation, for example of a deep and heavy loam, where the vine pushes a vigorous wood, the foliage being consequently dense and abundant, the closeness of the leaves keeps the fruit too much in the shade. From the dampness incident to such a situation, the grapes are liable to mildew and blight; and, should the season be rainy, to perish altogether. Where such should be the case, and there is reason to fear that they may be cut off before arriving at a healthy maturity, it will be advisable to strip the vines of a part of their foliage in the immediate vicinity of the grapes; but in doing this we must be careful to take only those leaves of the interior, and not of the outer surface of the heading of the plant. There are always small leaves shooting from the bottom of the vine, and such must be carefully pinched off, not torn, by which careless method the back of the stock plant would be injured, leaving the branch so as to be adapted to form the parent fruit-bearing vine of the next or succeeding season.

There are some vine dressers who, in the ope-

ration of tying, divide the work into two or three stages, beginning at the bottom, by attaching first the smallest shoots, then those next in size, and finally, the large branches or heavy oars. This method is prejudicial to the growth of the plant, and otherwise diminishes the prosperity of the harvest.

My objections to this mode of procedure are, first, the lowest branches are kept constantly in the shade, and draw out a feeble vegetation; on such the fruit is generally immature, and but seldom ripens and never perfectly. The second range is, in a great degree, deprived of the rays of the sun from above, as well as the reflected heat of the ground from beneath, forming an interior foliage which cannot prosper, and which should always be avoided. Superadded to the reasons before cited, a confusion in the stripping of the plants will ensue, by which the labour of the operation will be increased, exposing at the same time the fine foliage of the upper oars to the dangers of an indiscriminating weeding, as it is hardly to be expected that in this important work a sufficient degree of care will be observed by the ordinary workmen of the vineyard, to avoid such mischief to the principal fruit bearing branches. That the work may be well performed, the vigneron should proceed with system, beginning in regular line with the headmost plant, attaching and tying the branches below to those above, then securing the larger branches to the stake by which the vine is supported.\* By

\* The method in general use at the time our author wrote, of having but one stake to each vine, is, where it can be afforded, to be abandoned, and two stakes given to each plant.— TRANS.

this means, the stake will not have more than the proper number of branches attached to it, and these should not exceed four.

Sometimes the wood is too heavy and the branch too long, in which case it should be pinched off in the slender part, near the end, so as to range with the general height of the vine. This plan possesses the advantage of bringing all the fruit on the outer side of the plant, giving a more favourable exposure to the action of the sun. There is not the same confusion or danger of injury in the weeding, nor is it so liable to be attacked by the numerous insects.

Under this system of cultivation, the appearance assumed of the heading, is that of the cone, the interior being a void. In the tying up, care should be observed, that the leaves be entirely free, and not tied with the branch; and still more important is it, that the fruit should be free, as I have seen the fair bunches ruined by carelessly mixing them in with the branches when attached to the stake. The oars thus secured should be firmly and solidly fixed to the support, and above all, should not be too near the ground.

## ARTICLE X.

*The second Labour.*

ALTHOUGH this work, in the opinion of some, may appear of little importance, it has its advantages, and deserves, in the execution, attention and care. There are some vine dressers who perform the operation immediately before they tie up, or attach to the stake; others at a later period in the season, as, for example, at the moment when the grapes begin to set, or fairly to form. As the work is soon executed, it is important that the most favourable time for it should be chosen. I consider the proper time to be, just as the blossom has dropped, and before the grape is actually developed. When this work is done too early in the season, the fruit is exposed to injury from hail, and does not generally prosper as well as where the labour has been seasonably given. Where, on the contrary, it is postponed injudiciously, much injury to the flowers may be apprehended, and consequently a diminution of the fruit will follow, by working among the vines during the blossom.

In all cases, however, the labour should be performed in a dry time, in order the more effectually to destroy the weeds. In a light sandy soil, or a soil of gravel, which are both subject of drought, the case is somewhat different, as in either or both, this work should be performed,

and it were better that in such, the ground should be damp, or even a little wet.

In a light soil, the work should not be too deep; should the weather be favourable, no great risk is incurred where the workmen are careful in performing this labour, whilst the vine is in flower; but great attention should be given not to agitate the blossoms, particularly should the season be backward.\*

Those vines, which in the digging have received an indifferent labour, should be carefully weeded and broken up at an early period, by deep digging, and particularly in a dry time. The proper depth is from four to six inches. There are, however, some vine dressers, who will not allow their grounds to be broken up in a dry time, nor yet whilst the plant is in blossom. They profess to think that the dust arising from the digging when the soil is dry, settles on the blossom, and causes the fruit to discharge its fluid. I once entertained this opinion; but after a careful and attentive observation of the circumstances, am decidedly of the conviction that it is erroneous.

In the vineyards adjoining the high road, which in dry seasons are generally covered with dust, this inconvenience exists to a great degree, and on seeing them so covered that the colour of the plant, and its product, can hardly be distinguished, it would be a fair supposition that the

\* The American cultivator may understand this in his own manner. With due deference to our author, there appears to me a little contradiction on this subject. I incline to his former opinion.—TRANS.

fruit would not attain a favourable maturity. This is not the case; for we find that in such situations, the grapes at the season of vintage are equally large; and finely flavoured as those of the vineyard not exposed to the like inconvenience.

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## ARTICLE XI.

### *Pinching off the superfluous small buds.*

THIS work should be performed immediately after the blossom has fallen. It consists in detaching all the small shoots that have sprung between the leaves, which may have been forgotten or overlooked in a previous labour. The oars, or branches, should now be shortened to the height of the stakes, with this understanding, that they should not be less than four feet in length.

If the prop be a little short, the branch must be broken to a height somewhat exceeding it, though it is always desirable to avoid such an inconvenience.

Should the wood of the main stock or trunk be too short to reach the top of the stake, it must be secured to it without pinching, as it is important that the vines be regularly pruned and trained, not merely on account of the preserva-

tion of the plants, but for the appearance of a neat and careful vine dressing. The toilette of a belle for a midnight ball is not more studiously arranged, than the vineyards of the Swiss cultivator, who considers not merely the product of the vintage, but the neat and orderly appearance of his plantation, and the favorable impression of such regularity, on his fellow labourers of the same profession. There exists among them, in a high degree, the *esprit du corps*, and the whole fraternity feel scandalized, if in the visit of a French vigneron, a slothful or unskilful cultivator should be found among them.

In deferring this work too late, an injury is to be apprehended on the crop of the succeeding year, and the quality of the wine changed for the worse. The stock will be weakened by the length of the oars and number of the off-sets, the branches not attaining sufficient strength and solidity to the requirements of the succeeding season, and which are the sure guarantees of a successful vintage.

The vine shoots more vigorously in a wet than in a dry season. In the former, therefore, it will be necessary to strip, or pinch, the plants twice or three times during the summer.

The vineyard is sometimes exposed to long, continued drought, suffering greatly from an absence of the necessary rains, the foliage during such times becoming parched and assuming a yellow tinge.

Under these circumstances, I have sometimes consulted experienced vine dressers as to the remedy of the evil, and they have counselled

me to keep my vines closely pinched so as to shorten the branches, the theory of which is, to induce an active circulation of the sap, by which the plant is enabled to resist the malady.

Experience, however, has convinced me to the contrary, having found in my own cultivation, that the more the vineyard abounds in long oars and healthy branches, the less will be the suffering from the scorching drought referred to. In order to avoid in a dry time the burning of the foliage, care should be observed in the stripping, not to detach from the plant the small shoots, or offsets, immediately adjoining the fruit, as such offsets are the first to perish under the influence of such injurious drought. Instead of thus detaching such offsets, a couple of inches may be pinched off from the extreme ends of the shoots, which causes a new and fresh foliage to push forth, and keeps up the requisite vegetation which tends to the prosperity of the fruit, causing it to form and develope fairly, and promoting its growth and advancement towards a healthy maturity.

I have had occasion to remark the difference in a vineyard where, for the sake of the experiment, part of the vines had not received this salutary precaution, and on which the fruit had experienced a visible suffering from the omission.

Where the vineyard is exposed to this drought, the foliage becomes much parched by the heat of the summer sun, changes its colour, and assumes a yellow hue. In such a time the vineyard should be carefully worked, the soil turned

up, carefully avoiding all interference with the young roots.

This will greatly mitigate the injurious effect of the drought on the vines, as it prepares the ground for the absorption of the dews, which, during a part of the season, are heavy. In general, the vines require twice in the season to be pinched and tied up, which is highly favourable to the success of the cultivation. In the second pinching, the oars, which, from being too short, or perhaps from not having pushed into branch, had escaped the first operation, should be carefully taken off. There are some vine dressers, who, in tying up, pinch the plants, or detach entirely the small offsets that appear between the main branches, others disapprove and reject this plan; the first maintaining the opinion, that system tends to concentrate the sap in the main body of the plant, and causes a reflux so abundant as greatly to prejudice the growth and prosperity of the fruit, whilst the latter profess a belief directly the reverse, contending that the grapes will be more apt to improve by the adoption of the measure.

On this important subject, I have made a number of experiments, from the result of which I am of opinion, that no disadvantage arises from the pinching and tying up of the vines in regular measure, where the shoots, as is often the case, are not long enough to reach the top of the stake, and that this plan possesses certainly the advantage of giving to the vineyard an appearance of neatness and symmetry, always valued by the tasteful cultivator, and which, where it

can be attained without prejudice to the main object of the cultivation, he is generally disposed to seek, though at the cost of a little additional labour. As to the shorter branches, we must await their growth, and attack them when they shall have attained a sufficient length to admit the operation, in the postponement of which, no serious inconvenience is likely to ensue. Where this work is performed too early in the season, the vine dresser will probably find that the oars will be liable to be broken in the tying up, before or during the unfolding of the blossom: and yet I appeal with confidence to my fellow cultivators, and ask of them, if they have not seen in their own experience, their fruit remarkably fine and well set, notwithstanding such unpromising circumstances?

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## ARTICLE XII.

### *Of Manures.*

EVERY vine dresser is aware, that without occasionally reinforcing his grounds by a little artificial aid, an inferior and diminished harvest will be the result. As therefore it appears an essential part of the system of skilful cultivation, it is important to consider the particular manures best suited to particular soils and positions, and

the manner of applying them, not merely with the greatest advantage, but so as to avoid a serious mischief, which indiscreet or unskilful manuring frequently inflicts on the vineyard. In this consideration, one of the important points is, the period of the season at which the manure is applied. It is the habit of the vigneron of Switzerland to manure their vine grounds at three different periods, namely, at the first work of the spring, and immediately after the vintage in the autumn, or during the second labour. All are favourable, (though not alike so), provided the ground be not too moist or wet, and the weather reasonably dry. The autumn may be considered, of the three periods, as that least favourable to success; but it has this advantage, that it is the season when the duties of agriculture are less imperative, and the vigneron not hurried or driven by the necessary work of his grounds. The manure which decomposes best when wet, should be turned under and completely covered; and here let me observe that it should by all means be well rotted. In turning it under, care must be taken not to pack it in, or tread it with the feet. Some of your vine dressers have the habit of transporting the manure, when a leisure moment allows, into the vineyard, and suffer it to remain in heaps a considerable time before it is to be used. This practice is altogether to be condemned. As to the manure itself, it is injudicious, as a singular alteration in the quality of it is the consequence of an exposure from day to day, and especially if succeeded by a dry time. Evaporation from the

action of a warm sun rapidly carries off the strength of the manure.

There are yet some among us who act more absurdly, and in order to have their manure at hand when the early spring work is most pressing, transport it even in the autumn into the vineyard, there to remain during the whole winter.

The moral inculcated by the proverb, however applicable in most instances (of "taking time by the forelock") is singularly pernicious in its effects on this part of the vine dressing, as, independently of the deterioration of quality which the manure must experience from the snows and rains of winter and spring, an injurious influence is exercised on the vegetation of the vines, for at least two succeeding seasons, the vintages of which being ample testimony of such indiscretion. The proprietor will have cause to be satisfied, if he shall find the mischief cured by the lapse of two succeeding years.

I feel that I cannot in conscience tread lightly on this pernicious custom. All manures are not equally favourable. Different soils require different *engrais*. Some are productive of positive injury, rather than benefit. For example, the manure of horses, sheep, or goats, where not perfectly decomposed, or fully and completely rotted, if applied in a dry season, especially to the vines of a gravelly or sandy soil, exposes them to an artificial drought, causing the vegetation to be literally burnt, and inflicting a sensible loss on the vintage, which is generally greater when the season is dry. In such soils, the manure should

be from the cow, and should not be too much rotted, as the fermentation is less active than that of the others named, and consequently not attended with the like heating effects.

The moment of fermentation, or immediately after it, is that most favourable for the vineyard of a sandy soil. I consider that of sheep and cows as favourable to strong lands, to such as incline to moisture, and to the vineyard also of the plain. The same quantity of manure is not required by all the vineyards. Close, loamy lands are sufficiently manured, if done once in four years; and in a light sand or gravel, once in three years will be enough.

It may not be amiss here to remark, that over-manuring injures the quality of the wine. By such a system, the fruit is liable to a premature decay. The branches become fragile, and are easily broken. The wine, when in the vault, changes easily, and cannot be preserved so well or so long.

If, in the place of manuring every three or four years, the vine dresser would be at the trouble of putting on his grounds each year, the third or fourth part of the quantity periodically applied, the result would be more advantageous, the vines better preserved, the effect more favorable, and the force and verdure of the vineyard more uniformly healthful.

## ARTICLE XIII.

*Weeds to be destroyed.*

THE mischievous effects of weeds on the growth and prosperity of the vineyard, is well understood by the Swiss vine dresser, who, if he has the least care over his vine grounds, or the slightest regard for his professional reputation as a skilful cultivator, has taken care that his plantation shall present a neat, clean cultivation, from which the noxious weeds that infest the vines are eradicated before they inflict a serious injury on the plant and its product. In the vineyard in which weeds are allowed to accumulate, the quality of the vine suffers an injurious change; the product is sensibly lessened, and sometimes nearly cut off, and the plant rapidly hastens to premature decay. These effects are caused by the dampness engendered, as the rays of the sun are shut out, and thus the ground is not sufficiently heated to afford to the plant a degree of warmth, necessary to enable it to appropriate the salts, which enter so largely into the principle of vegetation.

The strength of the manure destined to the nourishment of the vineyard, is absorbed and taken up by the weeds; the vine will be covered by destructive parasitic plants, which bring on a premature age, and all the labour and care of

the vine dresser, where cleanliness is wanting, are rendered abortive.

It is manifestly important, therefore, to keep the vine grounds free of weeds, and especially is the necessity increased in a season when manure is dear. The most effective mode of destroying these weeds, is to eradicate them immediately after the vintage. The instrument best adapted for this purpose, is the *rattissoir*,\* by this means the vine grounds will be rid of the weeds before the seeds ripen, and will also be clean during the succeeding winter, to the period of the first spring labour. This is the moment when the vine dresser finds that he is repaid for the labour he has bestowed, by the facility with which the spring work is accelerated.

The *rattissoir* is the best instrument by which the weeds of the vine grounds can be eradicated, and the operation is effected with a greater degree of safety than it can be done even by the hand. Those who are expert in the use of this instrument, may give to the vineyard a third labour; and this is attended with great advantage, inasmuch as it is performed at a time usually considered hazardous to work in the vine grounds. This is not long before the vintage, when the weeds have, from the absence of any labour for some considerable time, shot up, and acquired a menacing attitude.

In skilful hands, with the *rattissoir*, the

\* The *rattissoir* is something like the shuffling hoe of our gardens, about six inches in breadth.—TRANS.

vines may even now be worked, and a suitable advantage will accrue by cutting down the weeds, which, among other sources of mischief, afford a harbour to the numerous insects that are collected to descend in mass on the ripening fruit, the moment the skin of the grape becomes so tender, as to enable them to perforate it with ease. Without the *rattissoir* this work could not be performed at this moment, as it would be dangerous to attempt it by the hand alone. There is a period at which this important labour ought not to be attempted, as the fruit would be greatly endangered thereby, that is, in the time which intervenes the first labour and the tying up of the branches, as at that moment the oars are long, heavy, and generally so fragile, as to render the use of any instrument attended with danger. This work, therefore, should only be done immediately after the tying up is finished.

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#### ARTICLE XIV.

##### *Gardening among the vines.*

IN the early part of my establishment, at the outset of my career as a cultivator, my knowledge, as may be easily supposed, limited, I fell into the habit of many of my neighbours, and introduced into my own vine ground a cultiva-

tion of grain, reaping annually from five to seven sacks,\* as well as esculent vegetables for the table. For several years I have abandoned this ill-judged system, which may show how strongly I am convinced of the pernicious effects of any other cultivation among the vines.

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## ARTICLE XV.

*Of the planting of vines in grounds where they have never before been.*

THE cultivator who intends to establish his vineyard in new ground, should carefully select his cuttings from strong, good plants, the small white grape being the species best calculated for such a culture.†

As the cuttings will succeed almost miraculously in such grounds, giving much strong wood, that little grape is to be preferred, because it pushes but feebly its wood, but gives a heavy crop of fruit.

Should your site be a prairie or plain, or grass ground, great care must be taken to shell off all the sod or grass from the surface of the field. It must on no account be turned under, as

\* About two and a half bushels.—TRANS.

† So far as concerns the Canton de Vaud.—TRANS.

where it is placed at the bottom of the trench, there is a liability of the grass vegetating, and finding its way to the surface. Moreover, there is danger that the fruit may be injured, as it will not ripen as early or as well, and that the quality of the wine may be injuriously changed. In general, where the wine is planted in a new soil, it does not produce so early as when it occupies the site of an old vineyard. The plant of the new ground pushes a vigorous vegetation, strong wood, and but little fruit. There is, however, a method to counteract this inconvenience. Manure in the actual state of fermentation must be applied. The pruning should be late in the season, leaving one or two shoots more to each plant, than under the ordinary system, according to the force and vigor of the plant. By this means, the vine will exhibit less wood and more fruit. When under such treatment the plant begins to show indications of debility, you must prune according to the directions given under that head. It is very much to be desired, that all our vine dressers should cleanse their old plants of moss. There are some skilful vignerons of our Canton who pursue this laudable practice, and it is but to visit the vine grounds of such, to be convinced of the highly beneficial results of the custom. This parasitic plant attracts and preserves a humidity greatly injurious to the prosperity of the vineyard, and, in many cases, causes the death of the plant. The numerous insects that harbour in such a convenient retreat, there deposit the egg, and bring out the young brood, that not only destroy the fruit, but live on the

vitals of the plant itself, exhaust its most precious juices, fill the bark with wounds and crevices, which the sap discharges in ruinous abundance, and induce in the end a complication of diseases, which rob the vine of all its energy, and bring on and hasten a premature decay.

CHAPTER I.  
OF  
MR. REYMONDIN'S WORK  
ENTITLED  
"L'ART DE VIGNERON."

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*On Pruning the vine.*

BEFORE entering on the details of the operation, so necessary to the success of the vine cultivation, I offer a few brief remarks on the utility and advantages resulting from a judicious administration of the vineyard, and the important influence on the results of the vintage from pruning with skill and at the favourable seasons. First, a primary object of this operation is, that the vine should not push too much and too heavy wood. Second, that the vineyard should not, in any one season, be suffered to produce too great a crop of fruit, by which in a few years the vine would be exhausted. Third, to assist nature in ripening the fruit, by causing the plant to produce its crop near to the ground,\* from which an additional

\* Though this is good counsel to the Swiss cultivator, it should not, I think, influence the vine dresser of Pennsylvania,

heat may be obtained. Fourth, to force the vine to push forth new shoots, from which the heading of the succeeding season is to be supplied, and to preserve the plant by these means in youthful vigor, prevent a declension of its powers, and bring on premature old age. The necessity of performing this work neatly and judiciously, must be at once apparent. Let us, therefore, consider the best manner of executing it, and other circumstances which indicate the period most favourable to a successful pruning.

The period generally considered as that promising success to this operation, in our country, is usually about the last week in February, or early in March, varying with the state of the season; but here let me observe, that this must not be understood so strictly, as different positions and different vines require that the operation should be performed at different periods of the season.

For example, where the soil of the vineyard is close and loamy and the situation a plain, such vines should be left to the last, and not receive their spring pruning so early as those of a sandy or gravelly soil.

Those vine dressers occupying the warmest positions of the Canton, whose vines are feeble, and where the most rigid economy is the preservation of the sap, the precious source of life to the plant, is required, should commence the spring pruning at an earlier period if possible, so

where the temperature of summer is equal to that of Italy.—  
TRANS.

early as even the latter part of January. In this case, however, great care must be taken not to cut the branch near the bud, because the frosts which generally succeed at that period, will have a tendency to injure, and destroy the embryo, or branch entirely. Those who, from want of knowledge, do not avail of the proper moment to perform the work; that is, who prune early the vines that, from peculiar circumstances, call for the operation rather late in the season, commit a great error; so also do they when the case is reversed. The first, particularly if the branch be cut too near the bud, inflict an injury, because should the pruning be succeeded by frosty weather, such buttons seldom vegetate, consequently, there succeeds not only the loss of the fruit for that season, but probably the branch best calculated for the fruit bearing wood of the succeeding season. The latter, who prune when an active circulation is in motion through the plant, cause a severe hemorrhage, which is not only ruinous to the plant, exhausting its powers and vigor, but the flow of the sap, which for several days trickles drop by drop from the wounded surface, courses along the bark, and stagnates around the base or foot of the bud, by which it becomes enfeebled and unfit for vegetation. There are nevertheless occasional instances, where such a late pruning has been attended with beneficial effects, that is, where unfortunately, at an advanced period of the season, when the vine has already pushed into leaf, a severe freezing, succeeds. In such cases the vine that has had late pruning, is consequently backward, and of course escapes

the rigors of the unseasonable frosts. I will cite an example in point.

A citizen of Lausanne, a cultivator of the vine in the vicinity of that city, fearing the approach of late frosts, experimented on his vineyards, by leaving a small part, or corner of it, untouched at the general pruning. He was ridiculed by the vine dressers of his vicinity as a visionary, but what was the result? A severe, unexpected frost succeeded, during which all the vines that had received their spring pruning, at the proper season, lost *in toto* their crop of fruit, whilst, on the contrary, those which had been left, and had not pushed into leaf, were unscathed, and produced that year a crop as large as the aggregate product of ten ordinary seasons.

Notwithstanding this, I should not advise any vigneron to follow this example, but where circumstances admit, to prune in the manner before recommended, and which is the general practice of this Canton; because should he even by some such as I have cited, and which is to be considered as an extraordinary case, gain by so doing, he will probably lose in another year, and find, in a series of seasons, a heavy balance against him.

Let us, therefore, consider the proper season and method of pruning the vine. There are among us vinedressers having the reputation of long experience, who prune their vines almost without slope. This is a pernicious practice, because the sap which issues from the wound, not finding on the cut surface sufficient descent, does not flow from it easily, but trickles drop by drop as it accumulates, causing frequently the perish-

ing of many of the best or cardinal buds. Moreover, the wounded end of the branch, heals with more difficulty than when the cut is oblique, on the side opposite the bud, neither too near, nor too far off, and though the latter is by no means so prejudicial in its consequences as when the cut is too near the button, yet it causes an unnecessary labour to the vigneron, who will be obliged to cut off, in the ensuing season the points of the branch thus left too long.

When cut too near the bud, there will not remain of the old wood enough to nourish and support it, and the branch from such will be weak, and produce but little fruit. That part of the vine below the best branches, and which, in general, are not cut very near to the main trunk, is called the *figure*, (*taille*) and from this, on each of which two buttons are to be left, we have the crop of fruit. It is important to observe a medium in this work, that is, about two or three inches of wood from the bud, and particularly where the pruning is early in the season. As to the number of branches as well as their several lengths, we must be governed by the particular species of the vine, as well as the strength of each plant. The vines of great strength having several horns, may be safely trusted with the support of four or five buttons, particularly should the vine be of that species called the *Grosse Rougeasse*, and growing a fertile soil. This vine is a plant producing strong, vigorous branches, with heavy wood, of a colour deeply tinged with red, and the buds at considerable distance from each other, producing but little fruit

and in which a reliance may be had that it will attain a fair maturity, unless destroyed by violent heat, or some such unforeseen calamity, from which it not unfrequently perishes, and which unfortunately in this country (Switzerland) is doomed to experience.

In pruning this vine, I have tried the experiment of leaving two or three buds, more than the number prescribed by the usual rules of vine dressing. The consequence was, that I had that season more bunches of grapes, but they were smaller, and of course less liable to wilt or perish.

The *petite rougeasse* produces more fruit than the other. It is of the two that which is more sure, and loves a warm exposure. When the vine pushes strong and heavy wood, and produces little fruit, two or three additional branches to each trunk should be left in the pruning, according to the strength of the plant. But in this case such branches must in no wise be allowed more than one button, and the "*borgue*."\* It should be here remarked, that where the vines are pruned too high, the quality of the wines is inferior; as, for example, it is the intention of a proprietor to eradicate a vine plantation, it is the usual practice to prune the preceding season with that view, leaving the branches long, in order to obtain a heavy crop of fruit.\* But what is

\* The *bourg* is the button the first of the new branch, nearest the old wood, and which does not produce fruit in the same quantity, nor of the like quality as the other buds.—  
TRANSLATOR.

thus gained in the quantity is lost in the quality of the vintage, as the vines of such a pruning are always inferior. But to return to the subject of extra pruning. If, at the expiration of a few years, the vigneron perceives that his plants exhibit symptoms of deterioration, the system must be discontinued, and he should return to the ordinary plan of pruning. I have, in my own vineyard, proved the utility of the counsel here given. In one corner of a small plantation, I had some time ago established a small vinery of the *grosse rougeasse*, and having remarked that these vines pushed much wood, and produced but little fruit, I directed my vigneron to leave on these plants, at the spring pruning, two or three buds on each branch more than usual. My directions, however, were forgotten, and the vines pruned in the ordinary manner. I took the work myself this year, and pruned as I had directed, leaving instead of the usual number, five, six, and sometimes seven buttons on each branch, according to the vigor of the offset.

My theory was justified by the result. The crop of fruit was abundant, and of good quality, and no part of my vineyard exhibited a more satisfactory appearance. I have consulted the most skilful cultivators of our Canton, and find

\* We must not be misled by this remark. The object of Swiss cultivation is, by ripening the fruit within three feet of the ground, to obtain an elevation of temperature from the reflected heat.

I am firmly of opinion, that in our climate such a reflection may be unnecessary, if not disadvantageous.—TRANSLATOR.

branches of the *gross rougeasse*, with the support of such an extra vegetation. I have seen also in different parts of the country, such vines planted against a trellise frame, in order to form an arch in the garden walks which have produced annually their heavy crops of fruit. I should not recommend the same mode of pruning known among us, as the *petite blanchette*, and the *petite rougeasse*, as both these vines produce in general a plentiful crop.

The *petite blanchette* produces most, when at the period at which the fruit sets, or forms immediately on the falling of the blossom, the weather is clear and warm; and it is better adapted to rich, close soils, than most of the other species of the vine, because in these soils this grape does not suffer in the same degree from the humidity incident to such positions, and from which the other vines will generally be in danger of great suffering, or perhaps of being cut off and entirely destroyed. In the pruning of these latter vines, I should recommend, that to the strong branches, four buttons should be left; to those of a less vigorous appearance, but three; but above all, attention must be given that the vigneron prune these vines low, observing carefully the rules heretofore prescribed, that is, to leave but one button and the *borgue*, or dead eye to each branch.

Another inconvenience attendant on long pruning is, that the figure (*taille*) soon becomes too high, and that such branches do not in general attain the same strength, nor produce so abundantly, as the branch near the ground, especially

where the succeeding winter prove rigorous, and the freezing severe. It frequently happens during the hard frosts of such a season, that both branches and stock of the plant perish entirely. Where unfortunately such is the case, I strongly recommend that the plant should not in the spring succeeding be eradicated, as is often injudiciously done among us. Where such perishing occurs, the root is generally unhurt, and will push new branches the following summer, though such will that season produce no fruit. It happens also sometimes, that the freezing is so severe, and the injury to the stock so vital, that vegetation above ground is hopeless. Still the root may be unscathed. In this case a vacancy or hollow should be made around the foot of the plant, from the roots of which a new vegetation will spring. The following year, such branches should be pruned, as those of the plants or cutting of one years growth, leaving two or three such branches, from which the year following, the branches will be fully established. In case it be found that on arriving at proper maturity, the branches be more than are required for a full heading of the new plant, the extra shoots may be laid to supply a vacancy, should any such exist, or where not required for that purpose, the strongest should be left, and the others detached, in the season of pruning the superflux vegetation of the vineyard. When I advise that the lower branch should be raised and carefully pruned, it must, however, be understood, that such branch should not be too near the ground, because where such is the case, inconveniences ensue, which

should be equally avoided, and as studiously guarded against, as those which arise from leaving the branch too high, and at an unfavourable distance from the ground.

The rule to be observed in this case, where circumstances admit, is to leave a distance of five or six inches of trunk between the surface of the ground, and the horns; or branches of the new heading. This applies to the *blanchette*, and *petite rougeasse*.

In the case of the *grosse rougeasse*, the branches should be trailed a little higher, because in the plant, the fruit ripening as near the ground as that of the other two, is more subject to blight and mildew, and perishes easily from such causes. It may not be amiss to add a few observations here, on the manner of pruning the *provins*, or laid branches of one year, the plants of the branch thus laid, taking the second year, among vignerons, the name of the *padres*, or rooted vines.

The *provins* of the first year should not be pruned too long, the strength of the bud at the upper extremity of such long branch, being found insufficient to form a good growth or heading, the following year. Such *provins* should not be allowed more than three buds above the ground; that is, calculating the distance from the level of the soil, where the vineyard is on a plain, because, more than this will cause an extravagant waste of the powers of the plant. From this general rule, however, may be excepted such branches as have their buds close to each other. In such case, it may be better to leave all the

buds within the length of twelve inches of the branch, but where this occurs, the vigneron should carefully rub off all the other eyes below such as are within that length, exceeding three in number, which three will, of course, in the selection, be those having a round, full appearance, indicating that they are the strong vegetation of the plant. This precaution is the more necessary, as without it a risk will be incurred of exhausting the vine at least for the two or three succeeding years.

Where the *provins* of the two years shall be found to possess sufficient strength, they should now be pruned, as to form the heading of the future plant. With this view, the vigneron should leave two branches, that at the foot of the plant nearest the surface of the ground being the longest, particularly where the plant is vigorous and stout. It is contended by some of the cultivators of our Canton, that such lower branch is exposed to many sources of injury. Before we proceed farther, let us add an observation on the nature of the inconveniences to which it is said such branch is incident. First, that it is constantly exposed to mechanical injury from carelessness and inattention in working among the vines. Secondly, whenever a late frost occurs in the spring, it is exposed to a greater injury than the upper branch, in consequence of its proximity to the ground, and an increased humidity from that cause. Third, a greater mischief is inflicted on it by hail. Fourth, that the fruit is subject to disease, and easily perishes.

All these objections should be taken in a quali-

fied sense, and a medium observed in the management of such young plants.

A moment's further consideration of the subject. Whenever it shall occur that the plants of two years be found without the usual force of that age, they should be pruned exactly like the plant of a single year's growth, and but one branch left to the vine. But should the vigneron determine on leaving two branches, he must, in the indulgence of such wayward fancy, prune extremely short, because in thus pruning, the vine pushes additional roots, and is thereby enabled to support the additional vegetation of the extra branch. The vine, moreover, is invigorated and strengthened, and will acquire a deeper establishment in the soil, and be better qualified for an active and beneficial vegetation the succeeding season. To the young *provins* of three years, it is usual to leave three shoots in the pruning, but where such plant be at all feeble, it is judicious to allow but two, and in some cases but one; and in all such instances the pruning should be short, as in the *provins* of one year it may not be amiss to mention here the experience of some of our skilful vine dressers on the spring pruning. In the performance of this work, it is frequently found, that between two old branches, (by which it is to be understood those of the year immediately preceding the growth of the last season) a fine young branch is found. This occurs generally in the young vine of three or four years growth. Such branch possesses a fine vigorous appearance, and to an

unpractised eye might appear the best shoot of the stock.

It is not, however, the case, as it possesses generally but little flower, vegetates sluggishly, and should by all means be detached, and not allowed to remain.

Whenever, in passing through his ground, the vigneron perceives on his plants the accumulation of moss, it should be immediately removed, where the situation of the vines be such as to justify the mark, without manifest injury to the fruit or young branches.



### *Remarks by the Translator.*

IN concluding the subject of vine dressing, as applicable to the cultivation of Pennsylvania, I shall briefly observe, that as the culture is new among us, that part of the counsel of the Swiss writers particularly claiming our attention, appears to be a preparation of the soil by previous judicious tillage for the reception of the cuttings. This is of primary importance, as otherwise it would be vain to hope a favourable issue to the experiment. Where the soil of the intended vineyard has been in grass, it is the practice in Switzerland to break up the sod in autumn, and expose the upturned furrow to the action of the frost during winter, by which the roots and sod will perish and be decomposed. Early in the

ensuing spring a crop of potatoes is planted, the digging and working of which during summer, again promote the object of preparation. After the crop has been gathered, it is the practice of some of the best cultivators to sow a crop of *esparcette*, (a grass much cultivated in the Canton de Vaud) or clover, which is turned under when in blossom, by deep ploughing, and suffered to decompose; a practice, which probably may not be required in Pennsylvania, is when the clover has decomposed, and become incorporated with the soil, to mine the grounds of the intended vineyard; and the small loose stones, with which the earth is there filled, are collected and put aside till the moment of preparing the soil for the reception of the cuttings, at which time the small stones are left at the bottom of the trench, and serve as a drain to carry off the moisture of the ground, and thereby ensure a proper dryness, so favourable to the roots of the young plant.

The agriculturalist will at once perceive the object sought by this process, and realize the indispensable necessity of a careful preparation of the soil for the reception of the cuttings, by a complete and entire decomposition of the sod by which the site of the intended vineyard has been occupied.

So important is it considered by the Swiss vine dresser, to get rid of all humidity in his grounds, that it is not uncommon to see the vineyard, which from springs or local causes, is at all exposed to such a disadvantage, covered with rubbish from the demolition of old buildings, and

which I could never learn possessed any quality but that of keeping the vineyard dry, by an absorption of the water. The preparation of the soil, however, is the business of the practical farmer, who is able to decide whether any mode more favourable to the attainment of the object is within the scope of our agriculture. It must, however, at all rates be accomplished as the *sine qua non* of the cultivation; and the vigneron who neglects this precaution, is afloat without chart or compass, with but little hope of remuneration for incessant toil.

The labour of the vineyard thus administered will be threefold, and the expense increased in a like proportion.

Discouragement is the necessary consequence; and a cultivation which, if judiciously directed, might fill our garners with plenty, is regarded as without the range of our capabilities, and abandoned in disgust.

A result like this, however, cannot be anticipated; it would be inconsistent with our national character; and it only requires that the agricultural community of our country should realize the benefits at their command, to grace the rites of Pomona with the ruddy treasures of autumn; and see in the press of every barn yard a modern temple to the presiding deity of the vintage.

ON THE

FABRICATION OF WINES,

AND THE

MANAGEMENT OF THE MUST.

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*Remarks by the Translator.*

IF, during the years of experiment in which he has been engaged, the cultivator has discovered that a skilful and judicious administration of the vineyard requires a patient and untiring devotion to the object he has accomplished, he has now to experience that the work is but partially performed; that new duties call into exercise his best moral and physical efforts, and that an attention unremitting and minute, an intelligence skilful and profound, are the important prerequisites to assure a successful and profitable result, and secure the anticipated harvest, for which years of toil and patience have been unsparingly given. Let us suppose, however, that the different members of the vineyard, faithful to the important trusts confided in them, have perform-

ed their respective duties; and that the business of the cultivation is fairly accomplished, that "Paul hath planted, and Appollos watered," and a beneficent providence smiled on the work, and "crowned the year with his goodness," by spreading before the cultivator in rich exuberance, the purple treasures of the vintage.

The profession of the vintner and vigneron are distinct and separate, and have as little connexion with each other, as the farmer who crops the golden fleece, and the artist who prepares it for the wants of the consumer. But it is probable, that with us the case will be otherwise, and the vine dresser who shall bring his cultivation to a successful issue, will have accomplished but half his work, and be called, in completing it, to study the efficient process of the manufacture and conservation of his wines.

Governments, in the old world, have made this branch of wine making the subject of legislative enactment. Princes have extended over it the shield of an especial protection. Philosophy regards it as an abstruse and important question, and the arcana of chemical science are enlisted in the service of the successful vintage.

I have passed three different seasons at the wine press in France, Italy, and Switzerland, and in all have been deeply impressed with the indispensable importance of a skilful and attentive wine making.

The fermentation alone, if properly directed, is in itself no holiday amusement. The different varieties of the grape will demand, in our various climates, an attentive observation on the force

and duration of the movement and action during this important process. For this reason it will be injudicious to mix in the mashing tub the different kinds of fruit, a practice not uncommon among slovenly and careless vintners even in France, though loudly condemned by the intelligent wine makers of that country, as destructive of the best results of the vintage.

It will require but little experience in this important feature of wine making, to arrive at the fact, that the fermentation of one kind of fruit may be in active operation, whilst that of another shall have completely finished, and the movement subsided, to a superficial observation; it will therefore be apparent that the wines of a mixed pressing will be harsh and sour, and difficult of long conservation. An admixture of different wines is common in France, and may be done to accomplish a special purpose, but never till fermentation has effected its work completely, whereas any mixture of the fruit at pressing is pertinaciously avoided by the skilful vintner.

So extremely careful, at La Vaux, is the Swiss cultivator, that by unanimous accord, they avoid a cultivation of different grapes in the same neighbourhood, and they are equally careful not to use the same mashing tub, or even the same press for different varieties of the grape. It is contended there, that the must is so sensitive that the delicacy and flavour of the wines are seriously affected, where the fermentation is conducted in tubs recently saturated from the mash of a different fruit.

An injurious practice prevails among some of the careless vintners of the Canton, of keeping their winter vegetables in the wine vault. Nothing can be more injudicious than such ill placed prudence; as of all the extraneous causes affecting the flavour and purity of wines, nothing, perhaps, exercises on them a more unfavourable influence than the proximity of vegetable exhalation. It is recommended also to place the wine vault entirely out of the influence of the dairy. Cheese making, in particular, is unfavourable to wines. The neighbourhood of the barn yard is avoided; in fine whatever has a tendency to animal or vegetable exhalation, affects by its odour the purity of the wine making, and is considered in the Cantons as a prolific source of mischief to the staple of the country. In considering, therefore, the mystery of the wine making as equally important with the skill of the cultivation, it will not, I presume, be clothing the subject with a consequence beyond its merits; and I proceed, therefore, with the translation of Mr. Bulos, which is annexed, and which is entitled,

THE  
ART OF WINE MAKING.

BY MONSIEUR BULOS.

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THE precise moment advantageous to this important feature of the system of wine making, varies according to the object it is proposed to accomplish. In most northern countries, where the temperature but rarely allows the grape to attain a perfect maturity, the vigneron is compelled to gather his fruit in an immature state. Notwithstanding the unripe condition in which the grape at such a moment is found, the gathering becomes indispensable, as the rains incident to the advancing seasons, the humidity of the atmosphere, the cold nights of autumn, with the probable danger of early frosts, seriously injure, and sometimes expose to entire destruction, the whole crop of the vineyard.

In southern countries, where the climate is in general more favourable to a cultivation of the vine, the vintage is hastened or retarded, according to the quality which the cultivator pro-

poses to impart to his wines. In the estimation of some of our proprietors, the merit of this quality consists in the delicacy of the flavour, which is inconsistent with a perfect maturity of the fruit, whilst among others the desideratum is, to give the wine an alcoholic spirit and delicate flavour, which require a full development of the saccharine principle. It is with this view, that in Spain they allow the grapes to dry on the vine before gathering them; that in Rivesaltes and the isles of Candia, and Cyprus, they are suffered to dry.

The *Vin d'Arbois*, and those of *Chateau de Chalvos*, are not gathered till the month of December. The *Vin de Paille* of Tourraine, is from the grape gathered during the dry time, and under the burning rays of the mid-day sun. The fruit is then spread over frames of narrow lattice work, in such a manner that the bunches are never in contact, and thus exposed to the rays of the scorching sun. At sunset the grapes which have become decayed, are carefully detached, after which they are placed in a dry apartment during night. On the succeeding day they are exposed in like manner to the action of the sun.

When by such exposure they become completely wilted, they are thrown into the press, and the wine extracted, and placed in the proper vessels for fermentation.

In southern countries, the general period of the vintage is when the grape has attained a full maturity. When the fruit has arrived at this state, it presents the following indications. The stem

of the bunch shows a russet brown, the bunch hangs and does not maintain an upright position, as when immature. The grape is soft and transparent; the skin loose and thin. The bunches of grapes are easily detached; flavour sweet and viscous. The seed firm, brown, but not glutinous. When such are the indications, the fruit is in the proper state for gathering, but care must be taken that the work is judiciously executed, and under a combination, if possible, of advantageous circumstances. It must by no means be indiscriminately performed, or without a due regard to the following attendant circumstances.

The vigneron should select a dry day for the work, and by all means retard the gathering until the sun shall have dissipated the mist, incident to the mornings of our autumnal season, and completely dried the fruit of the dews of the nightfall. The atmosphere should also be warm and dry. The workmen to whom this business is confided, should be directed by an overseer, intelligent, firm, and rather severe in exacting of the labourer an honest fulfilment of duty, to require that the stems should be cut short, and to put on one side the branches which are ripest and soundest, and detach from them such grapes as have begun to decay, or are much dried.

The former cannot fail to impart to the wine a disagreeable flavour, and the latter are seriously injurious to the operations of the must. Great care will be necessary that the labourers be not allowed to eat in the vineyard, as a serious in-

jury to the fermentation would arise, from the admixture of any foreign ingredients, such as crusts of bread, cheese parings, or other extraneous matter in the mashing tub.

In detaching the bunches from the vine, they should be carefully cut with the instrument, called the vintage scissors, and not pulled or forcibly dragged from the stock, as such negligence has a tendency to bruise the fruit, the skin of which when broken affords an outlet through which a valuable portion of the saccharine fluid is lost. For this reason, the gatherers should carefully place the fruit in the baskets in such a manner as to avoid all bruising or mashing. All such bruising should be carefully guarded against till the proper period arrive for the performance of the operation, which is the moment the fruit is thrown into the mashing tub. In some wine countries, it is the practice to perform the business of the vintage at several different pressings, with intervals between each operation. The gatherings, consequently, are of that part of the fruit, which, on attentive observation, are found to exhibit the indications of a perfect maturity. The bunches of such are uniform, the fruit transparent, the seeds black, or dark coloured, and the stem beginning to dry. The wine produced from the pressing of fruit, thus judiciously selected, is finer and more delicate than under the ordinary process. In many countries, where an extreme abundance of the vintage does not allow an attention so minute, it is the practice to cut and press altogether the fruit of the season, without assorting or separating it.

*Of the Crushing, or operation of the Mashing Tub.*

THE fruit of the vine contains within itself all the elements and principles of fermentation—but these, isolated as they are in the single grape, require to be brought in contact to the object of a mutual decomposition, and the conversion of the natural juices, which are soft and saccharine, into a liquor, vinous and spirituous. The crushing accomplishes this object. It breaks up the same cellular cavities in which the leaven lies dormant, and which contain the saccharine principle. They are thus mixed and associated together, agitating each other in active movement, and giving birth to the various phenomena, which together constitute the process of fermentation. But is it, or is it not, judicious to detach the grapes from the stems?

This question, once so warmly contested by cultivators, has ceased longer to agitate the agricultural community. It is not at this day the subject of theory or speculation. It is now perfectly understood, that the stem of the grape contains neither the aroma, nor the saccharine substance, and imparts to the wine neither body nor flavour. But the acidifying principle it contains, relieves the flatness and insipidity which characterize the wines of northern countries, where the vintage is frequently accomplished during a cold and humid season. In the districts, for example, of Orleans, they have been compelled to abandon the system of detaching, as it has there been

found, that under such course the wine has become too rich, and more difficult of conservation. It has, moreover, been observed, that where the must has not received this preparative process, the fermentation is more active and regular. The stem may be regarded therefore as an useful auxiliary in the fermentation, particularly when there may be reason apprehended that the decomposition will be rapid and incomplete, promoting the fermentation, and giving a duration to the wine which otherwise it would not possess, but imparting at the same time a harshness which injuriously affects the character of the vintage. The practice is adopted by some and condemned by others. Whatever method shall be pursued by the vintner, it is imperative that the fruit be completely and effectually crushed in the mashing tub, without which the fermentation will be partial and sluggish in its operation. The duration of this important process will be injuriously prolonged, and the wines affected unfavourably. The necessity of a skilful fermentation is unversally admitted, but the opinions vary among vintners as to the most judicious mode of conducting it. In Champagne the fruit is thrown into a case or box, of the dimensions of four feet square, which is open at the top, and in which the grapes are thrown as they are brought from the vineyard. This case has at the four sides longitudinal interstices, between each board or stave. These openings are of such width as to allow the liquor freely to pass off, as it is forced by the pressure of the screw, but yet sufficiently close to retain the mash

within. The expressed juice passed into the platform on which the tub is placed, and flows by the various channels of the platform into the tub placed below for its reception. Into the mashing box a workman, shod with heavy wooden shoes, enters, and treads down the grapes in such a manner as to prepare them for pressing.\*

The saccharine fluid passes off through the interstices, and when the crushed fruit forms a mass in the cage, a door at the side is opened, and the remainder is broken up and pushed into the tub, among the expressed juice, or retained in the cage according as the vintner intends that the fermentation of the must shall be conducted, with or without the residuum being mixed with it. The same process is continued from time to time, till the necessary tub is completely filled.

This method is pernicious, and destructive of the best results of the vintage. It prolongs injuriously the operation, and it is greatly preferable to collect the materials for an entire pressing, and perform the crushing at one and the same time. The fermentation will, consequently, be simultaneous and uniform.

It is also advantageous to submit the fruit to an uniform and equal pressing, as it is evident, that where the vessel contains a portion of the grapes but partially broken up, and unequally

\* This uncleanly practice has long since been abandoned in Switzerland. The mash is broken up there, with heavy wooden hand spikes.—TRANS.

pressed, or where to fill the subsiding space, it becomes necessary to make successive additions of the must, the decomposition will be partial, and necessarily incomplete. Supposing, for example, the whole mass thus enclosed, and subjected to the different crushings as each is thrown in the tub, to require eight days to accomplish the various phenomena of the fermentation through which it must pass, is it not apparent, that in some, such as the last thrown in, the term will be shortened, and the work of such be incomplete, when the operation of the first will have been completely finished. The result of such mismanagement will be a wine predisposed to acidity, a wine, the fermentation of which has been partial and incomplete; and again, a third ingredient, yet retaining the form and character of must.

Such an unskilful admixture will infallibly produce a wine of greatly inferior quality, and susceptible of change from the slightest transient causes.

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### *Of the Fermentation.*

THE receiving tub which is judiciously placed, and under circumstances favourable to the object, exhibits symptoms of improvement almost as soon as it becomes filled. But these phenomena are affected by various causes, which hasten,

retard, or modify the action of the fermentation.

The temperature—the action of the air—the proportion of the different principles of varying in different fruit, and under different circumstances, even of the same grapes, which enter so essentially into the character of the must, exercise an important influence on the operations of the wine press, and give a result favourable or otherwise to the character of the vintage.

The temperature comprised between the twelfth and fifteenth degree of centigrade,\* is that most favourable to the spirituous fermentation. Below this temperature it lags heavily, and languishes in its action and movement. It becomes too rapid and tumultuary if above it.

A singular fact has been remarked, which proves how important it is that the air should be warmed and dried by the rays of the sun before the gathering of the grapes, that the fermentation is always sluggish and difficult when the day is cold or the atmosphere damp, at the important moment of the vintage.

It has been observed in Champaigne, that when the grapes have been gathered in the morning, the fermentation is inert and more unfavourable than that of the same fruit gathered after mid-day, when the atmosphere has been warmed by the rays of the sun. In different experiments of Chaptal, this result is confirmed, and proves that where the must is too cold, and shrinks below the degree of temperature necessary to assist the

\* From 52 to 57 degrees of Fahrenheit.

process of decomposition, it is difficult to remedy the evil, and obtain a full and complete decomposition by artificial means.

When from necessity, in a northern climate, the gathering is effected during the cold and damp weather, it will be advantageous to dispose and arrange the grapes in a dry loft, or other convenient situation, exposed to the temperature of from 12 to 15 degrees centigrade, ( $52^{\circ}$  to  $57^{\circ}$  Fahrenheit) and on no account commence the crushing till the fruit shall have attained that heat. Where, from circumstances, this cannot be accomplished, the remedy is to throw aside the mashing tub after the grapes have been completely crushed, and a sufficient portion of warm must, to communicate to the whole mass the required temperature. Where again this be impracticable, recourse is had to a cylinder of a peculiar form, used in such a contingency in Burgundy, to produce this result. Although the air does not produce on the fermentation an effect so immediate and direct, it is nevertheless equally necessary to the result, and exercises an important, though perhaps less sensible influence on the whole operation. The must confined in a close vessel is transformed to a wine, possessing generally a generous character, and more agreeable flavour than that obtained by the ordinary course of fermentation. The carbonic acid developed makes a strenuous and constant effort to escape; but the vessel, hermetically sealed, allowing no outlet by which the gas can pass off, it ranges actively through the whole mass, agitating it with violence, and breaking up the par-

ticles which have been but partially crushed, or, where meeting a resistance too powerful to be overcome, it exercises on the surface of the liquid an expansive energy, arresting every species of decomposition. To guard, therefore, against an incomplete fermentation, as well as the dangerous explosions incident to such neglect, it becomes absolutely imperative to facilitate the disengagement and escape of the gas, and expose the whole mass to a free communication with the atmosphere.

It must not, however, be concealed that this necessity has its accompanying cost, as the elastic fluid which is thus continually thrown off by the action of fermentation, impoverishes the mass, and despoils the wine of no inconsiderable portion of those principles which determine the character of the vintage, and constitute its alcoholic force and agreeable flavour.

It has been a deep study among intelligent members of the profession, to devise some efficient means to neutralize this evil, and lessen the waste, which for a long time was considered as a contingency inseparable from the system of fermentation.

The senator Dandolo advises the use of a movable covering, which he devised for that purpose, and which is a canvass awning suspended over the opening of the vessel by a cord fixed to the centre. The application of this above the vessel contributes to preserve an equable temperature through the mash, and checks in a de-

gree, the acidity of the bonnet\* (*chapeau*), and render the evaporation almost null. By means of this apparatus, the odour which is usually so strong in the wine house, containing a number of bottles in a state of fermentation, is sometimes scarcely perceptible. The gas thrown off deposits on the lower surface of the awning the fragrant principle with which it is surcharged, escaping at the sides, completely deprived of all the aromatic essence which it contained. The must is composed of the different principles of sugar, tartar, leaven, and water, which together constitute the formation of the mass, and on which the action is mutual, and less or more energetic or durable, according as the proportion of either may predominate. It is the first which alone contains the principle of fermentation, and to the changes effected through the agency of it, it is mainly to be ascribed the production of alcohol. We should not, however, confound this principle with that of the sweetness, which is the characteristic of most of the fruits of our country; though both affect the palate in a similar manner, they are far from being of the same nature, but decompose when brought in contact, without a production of the alcohol, which is peculiar to the fruit of the vine. When the sugar is present in excess, the wine to which the fermentation gives birth, is sweet and cloying. On the contrary, it is sharp and acid, where the sac-

\* This is the technical term to denote the *scum*, or thick coating by which the mash is covered, during the fermentation.—TRANS,

charine principle predominates; because, as soon as the substance opposing it is overcome, it exercises an active influence on the other elements of the must. It is easy, however, in this case to correct the unfavourable effects of such a composition. In the first, it will be sufficient to add to the must a small portion of leaven, to facilitate a conversion of the sugar into alcohol, and obtain a spirituous wine of good body. In the second case, the addition of brown sugar, or purified honey, in a judicious quantity, or, where such may not be at command, other similar ingredient may be substituted. These will counteract the effects of leaven, and contribute to a development of the latent alcohol.

It is by this means that a generous wine is obtained, of a sweetness rather cloying, which is sometimes the object of the vintner, from immature grapes of a cold northern climate.

Where the season has proved rainy or humid, or where the vines occupy a low or loamy soil, the must contains, in general, a superabundance of water. Where the aqueous proportion predominates, the fermentation is sluggish and incomplete.

The wine is feeble, thin, and dilated, (*delayé*) and the excess of leaven, which always characterizes the wines of a rainy season.

There are various methods adopted to counteract these injurious effects, all having for their object to weaken or neutralize the aqueous component of the mass. By some vintners it is reduced by evaporation. Others absorb it by the means of plaister. But the better mode is, to

follow nature in her operations, and supply the imperfection of her work in her own way, and correct the mal-composition of the must, by adding such a proportion of sugar as would have been developed if the season had proved favourable.

Chaptal defines this portion to be from fifteen to twenty pounds of brown sugar or molasses to the hogshead of wine. This addition possesses the double advantage of rendering the wine more spirituous, and neutralizes the acidity to which, under such circumstances, there is a constant tendency. Where the temperature has been uniform and cheering, and of sufficient elevation for a propitious vegetation, allowing the fruit to arrive at complete and perfect maturity, the leaven will not be found to present in a fair proportion, and sufficient to convert into alcohol, the whole saccharine substance. It becomes, therefore, necessary to add to the fermenting a mass portion of leaven, and a small addition of tartar. These ingredients, according to the experiments of the chemist, of whom I shall speak hereafter, contribute to render complete a decomposition of the sugar.

When these different obstacles of composition and temperature cease to oppose the action of fermentation, the mash commences to boil, and the work of purification is in action. The liquors are agitated and heated; the stems, seeds, skin and pulp, float alternately through the mass, and uniting at length through the surface, are finally deposited in tranquillity on each other, forming a dense, deep covering, familiar among

the profession, as the "bonnet of the vintage," disengaging during the action, in great abundance, the carbonic acid. The temperature is raised, and the sweet flavour dissipated. The liquor becomes gradually more vinous, assuming a deeper colour and transparency, as the particles on suspension are precipitated, and take their ultimate position as lees, at the bottom of the vessel. The boiling, which so agitated the mass, becomes gradually tranquil, assuming its former volume, the operation is accomplished.

Let us in a few words define the circumstances by which this is effected. They are condensed within four simple causes, to wit: The production of the heat; The disengaging of the carbonic acid gas; The fermentation of alcohol; and The proper colouring of the liquid mass.

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### *The production of Heat.*

THE action of fermentation constantly disengages the latent heat, and causes a great elevation of temperature; but there are some cases in which there is not an equilibrium through the whole mass. The centre of the mash, on plunging deep your thermometer, will often be found much heated, whilst the sides and surface remain cold. It will there become indispensable that the evil should be rectified, and the operation of the various phenomena be rendered equal, in

order to a proper admixture of the different principles in suspension, until an uniform heat be established. A practice in Champagne is, to suspend by an elastic shaft, or by a simple beam, balanced over the fermenting vessel, a long pole, or sapling, terminated by a block of two feet square. This is plunged successively, and at intervals, into the vessel which contains the mass, causing an agitation through the whole by such movement, till the object be now accomplished. Some vintners prefer their workmen to enter the tub, shod with wooden shoes, to break up the mash by actively moving among it, and thus promoting the fermentation, by disengaging the gas, which cannot escape from the confinement in which it is thus suspended. Dom Gentil, quoted by Mr. Chaptal, has made on this subject several interesting experiments; and his theory is, that the method here prescribed has a tendency to render the fermentation more prompt, imparting to the wine a delicate flavour, a deeper hue, and a generous character, which otherwise it would not attain. On the contrary, it is contended by Mr. Dandolo, that the repetition of the crushing is injurious. From a series of facts elicited by careful experiment, he is convinced that an unfavourable influence is exercised on the results of the wine making, by replunging into the centre of the mash the various articles accumulated on the surface, which have undergone an entire change, by the action to which they have been submitted, and that the *bonnet* thus again submerged, composed as it is of various articles, possesses new principles, which,

though highly fitted for the important duty of covering the liquid, and protecting it in a state of comparative rest from the action of the air, imparts to the wine a disagreeable flavour, and sometimes an unfavourable odour. It appears to me on due consideration of the systems of these two masters, that where the fermenting house is kept, during the action, at the proper temperature, this operation is superfluous. The different particles composing the mass will be sufficiently heated to induce the mutual action necessary to an effective decomposition of the several substances forming the vinous principle, and that the object sought will be attained without this troublesome process.

We proceed, therefore, to the consideration of the second cause named.

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### *Carbonic Acid.*

THIS gas, disengaged in great abundance during the action of fermentation, deserves an especial consideration, not only on account of the great portion of alcohol, of which it despoils the liquor in the decomposition of the sugar, but because of the dangerous consequences to the life even of those who imprudently inhale it. The first of these objections may be diminished by means of planks and coverings, by which the mashing tub must be closed, and by a use of

the canvass awning, before cited, of Mr. Dandolo. The deleterious effects of the latter may be easily neutralized, by placing lime water in different quarters, or by scattering the lime itself, which should be pulverized, through the vault or chamber, in which the mash is transformed to the vinous liquor. It is, moreover, easy to determine where the danger exists from the impregnated atmosphere of the fermenting house, by taking always on entering it a lighted candle. So long as the flame is clear and free, no unfavourable consequence may be apprehended; but the moment it is perceived that the flame languishes, or threatens to become extinct, it is an indication that danger is at hand, and immediate retreat is a measure of prudence. It is to the presence of this gas, that the wines of Champagne owe their effervescing quality.

The *third* important consideration may be regarded as the *formation of the alcohol*.

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### *Formation of the Alcohol.*

THE fermenting particles, and the sugar contained in the must, possess in themselves the elements of a mutual decomposition. A concretion takes place as to the one, which is precipitated, whilst the other cedes a portion of its component principles, by which it gives birth to the alcohol. This liquor, which alone forms and

constitute the wines, giving to them their most important force and body, is in general more abundant, in proportion as the saccharine substances themselves most abound. The product of the fermentation may be considered more or less generous, by introducing into the wine vessel a greater or less quantity of sugar. It is hardly necessary to add, that this addition must be judiciously made, and at the proper period. We have before said on this subject sufficient to establish the fact, that the wines considered as the most perfect, are those resulting from a must, the proportions of which, in their nature, do not allow too long a retention on either the leaven or sugar. It should however be here observed, that the excess of the one, is not attended with the same inconveniences as a superabundance of the other. In effect, where the saccharine substance predominates, the wine is sweet, dilated and feeble, and with little danger that it will change; whilst, on the contrary, where the leaven has not evaporated and passed off, it continues to agitate the mass, and so to act on the different principles of the whole, as to expose it to an acidity by which it will be injuriously changed. The good effects resulting from the addition of sugar, have long been disputed by Macquer, who, from numerous experiments, appears to doubt their favourable efficacy. "In the month of October, 1776," says this chemist, "I procured from a garden of Paris, a sufficient quantity of white grapes to make fifteen or twenty quarts of wine. They were refuse grapes. I chose the fruit in a state of immaturity so unfavourable,

that it was scarcely to be anticipated that they would produce a wine fit for drinking. The half of them were so unripe, that neither the grapes nor the stems could be tasted without an astringent acidity which was but barely supportable. Without any other precaution than that of separating the fruit which had perished, from that which, though immature, was perfectly sound, I caused it to be broken up by the crushing wheels, and expressed the juice by hand.

The must of this experiment was thick, of a green hue, of a flavour called by the vintner, 'a sour sweet,' (*aigre douce*) in which the acid was so predominant, that no one could taste it without a countenance distorted by grimace.

I dissolved in the must a sufficient portion of sugar, to impart to it the flavour of a tolerably sweet wine; and without heating or clarifying it, I placed it in a cask, in a summer house at the bottom of my garden, where it was left to work its own way in the purification. The fermentation was fairly established, in full operation the third day, and continued in active movement for eight days, in a degree which, though quite sensible to observation, was nevertheless very moderate. After that time it ceased of itself to exhibit any appearance of movement or action. The wine which resulted from the experiment, being newly made, and still thick, was yet of a vinous force and agreeable odour, and lively and *piquante*.

The flavour was a little harsh, inasmuch as that of the sugar had as completely disappeared as though it had never been added to the mass. In

this situation, it was allowed to remain during the winter, in a cask. On examination in the month of March, I found that without any attempt to clarify it, either by isinglass, or by transvasing it, the wine had become clear and transparent; the flavour still lively and *piquante*, was much improved, and more pleasant than immediately after the active fermentation.

There was a flavour which was more sweet and soft, and possessing no character which would at all indicate a mixture of sugar. In this condition I put it into bottles, where it remained in repose till the month of October, 1777, when on examination it was found to be clear, brilliant, and of agreeable flavour, resembling a wine from the white grape of good selection, and might be supposed the production of a good vineyard, in a favourable season. Several *connoisseurs*, to whose judgment I submitted this wine, decided it to be that of a fair production, and could scarcely be convinced that it was from unripe fruit, the acidity and astringency of which had been corrected by sugar.

The success of this experiment surpassing my most sanguine expectations, led me into a new trial of the same character, the result of which was still more decisive of my theory, as the fruit employed was yet more unripe, and the grapes of a quality inferior to that of the former cited.

On the 6th November, 1777, I collected from an arbour, in a garden near Paris, a quantity of large grapes, which, from their shaded position beneath a semi-circular trellice, had received but little advantage from the sun's rays. This

fruit seldom arrives at maturity in our climate, and is familiarly known under the appellation of the verjuice, (*verjus*) no other use being made of it than to express the juice; before the fruit has changed colour, to be used as vinegar for culinary purposes. The fruit which I selected for my second experiment had scarcely given the least indication of a change of colour, and from a belief that the season was so far advanced as to afford no hope that it would ripen, had it been left ungathered on the vine. It was yet so hard that I placed a portion of the fruit in a vessel on the fire, in order so to soften it as to extract from it a greater quantity of juice, of which it yielded eight or nine pints, the character of which was that of extreme acidity, in which, however, in tasting, was detected an indication of the presence of a slight portion of sugar. I dissolved in this juice as much of brown sugar as gave it the necessary sweetness. It appeared requisite to add a larger portion than that applied to the juice of the former experiment, because the acidity of the latter must was greater and more strongly marked. After the dissolving of the sugar, the flavour of the liquor, though sufficiently indicating the effect of the sugar, afforded but little hope as to the result, because the sweet and the bitter were so strongly characteristic of the mixture, that the flavour was harsh and unpleasant.

I placed this must in an earthen vessel, which was not entirely filled, covered by a clean linen napkin, and as the season had advanced, and the weather was chill and raw, it was placed in a

chamber, the temperature of which was regulated by a stove to the favourable point, and an equilibrium maintained day and night of 12 to 15 degrees of Reamur, (from 62° to 64° of Fahrenheit). I examined the must four days after, and found that the fermentation was not yet sensible. The liquor appeared to me equally sweet (*sucrée*) and equally sour,\* but in a short time after, an union of these two qualities commenced, and when the combination had become complete, the result was a wine of an agreeable flavour. On the 14th November the fermentation was at its height, and the mass in active movement. A lighted candle introduced into the vessel was immediately extinguished. On the 30th the sensible fermentation had subsided. A candle introduced burned freely and with a clear flame. The wine was not thick or muddled, but of a

\* A condition perfectly intelligible to the vintner, who understands from this technical description, though an apparent contradiction, the state of the must existing in a separate form, before the chemical union.

*Remarks by the Translator.*—Let not the American cultivator be misled by this deceptive tale of our author. His treatise, although an excellent breviary of practical wine making, should be read without reference to the visionary experiment here cited, which must be regarded as theoretical, and calculated to mislead the inexperienced as to the necessity of an important feature of vine growing, that of ripening perfectly the fruit of the vine, before it be submitted to the operations of the wine press.

I have frequently seen in Switzerland, the pressing of unripe fruit, such as here described, and the wine was always inferior, and scarcely worth the sugar necessary to the preparation.

Do not let us be deceived on this point. Ripe fruit can alone produce good wines.

light or white cast. The savour was but slightly marked by the taste of sugar, but was lively and *piquante*, of a generous warm character, but slightly gaseous, and a little sharp. In this condition I sealed up the mouth of the vessel, placing it in a cool cellar, that the wine might ripen by an insensible fermentation, during the succeeding winter. On the 17th of March, I found on examination, that the wine was perfectly clear and transparent. The residue of the savour of sugar had dispersed, and none of the acid character remained. The wine was that of a strong full grape, possessing a taste agreeable and pleasant, but without a decided flavour or perfume, as the immature grape, known among the profession as the *verjuice*, possesses no odourous principle, nor rectifying force. In fine, this wine, which though quite new, will improve greatly by the insensible fermentation, and promises to become from age a soft and agreeable liquor.

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*Drawing the wine from the fermenting tub.—  
Decuvage.*

INASMUCH as the spirituous fermentation quickly degenerates, and settles into the vinous fermentation, it becomes important to give to the process at this moment a careful and attentive observation.

Some vintners profess to decide from a variety of signs and circumstances, the precise moment at which the action of the one has ceased, and that of the other is fairly in operation. These phenomena vary (it must be apparent to the slightest observation) both in force and duration, with the variations of climate and changes of season, as well as from the nature and quantity of the must and the mass.

It is, therefore, easy to conceive, on a little reflection, that it becomes impossible to fix the precise moment most favourable to this important part of the wine making, and that all these systems which profess for their principal object the establishing of a fixed period for the "*decuvage*," must in their nature be vague and untenable.

The only sure guide in this case, is carefully to observe the course and progress of the decomposition of the principle of sugar.

The object to be accomplished by the fermentation, being the transformation of the liquor into alcohol, it is desirable that the action should be energetic, and continued, rather than abundant. Accordingly, the grapes of the southern vineyard should be suffered to remain longer in the mash, than those of a northern climate.

In considering this operation, another important feature must be constantly in view, that is, that there is a constant disengagement of heat, and of carbonic acid. By the one, the perfume which constitutes the chief merit of many fine wines, is volatilized and dissipated; and the other flies off and escapes, charged with a large portion

of alcohol, despoiling the liquor of a principle which contributes largely to its piquancy and agreeable flavour. The wine, therefore, which are in their nature light and feeble, though possessing an agreeable perfume, and those white wines, whose principal quality is a tendency to effervescence; should receive but a slight fermentation.

The wines of Burgundy, of the first pressing, (*vins de primeur*) such as those of Volney, of Pomard, are allowed to remain only twenty or thirty hours in the fermenting tub. Gentil, who has made many interesting experiments to decide this question, is of opinion, that they should be withdrawn from the tub as soon as the taste of sugar has disappeared. Chaptal, however, in treating this question, observes that the disappearance of it, is not absolute; as, by experiment, he has proved that as the vinous flavour is developed, the taste of sugar is no longer sensible, but that the spirit of the wine, which is constantly formed, so masks and conceals the small remnant of the sugar, that though actually present in a slight degree, it becomes insensible. "It is the precise moment" (says Chaptal) "at which the sweet savour disappears, which is that most favourable to the *decuvage*."

"I have in my observations on this subject, seen that among practical vintners, the most distinguished for the success of their wines, this is regarded as the moment most favourable to the accomplishment of the *decuvage*. A precaution not less important than that of which we have just spoken, is the preparation of the vessels, in

which it is intended to put the wine. They should be made of oak staves, perfectly sound, and seasoned; and no stave of the wood near the bark or roots of the tree should be used, as both are liable to become the harbour of myriads of ants. By the odour which they communicate, these insects are not unfrequently the remote cause of the taste of the cask, sometimes imparted to the wine. The new casks should be successively washed with lime water, salt water, and finally with pure hot water. The old casks, before used to contain wine, should be thoroughly cleansed of the tartar, which in general accumulates in concretion at the sides and bottom of the vessel, and subsequently carefully washed with hot water.

After this, some few of the casks should be filled, either with wine, or hot must, which should be agitated and shaken about, and then emptied from one to the other till all the wine vessels shall have undergone a thorough ablution, and the wood deprived of any acidity it may have contracted, by becoming saturated with the several liquors thus introduced. Sometimes an infusion of flower of peaches is used, which has in general a good effect, and leaves an agreeable flavour.

When a cask has contracted a disagreeable odour, such as that from mould, bugs, or other insects infesting an empty wine vessel, it will be prudent to omit all these cleansing precautions, lest by the use of them, the odour should be merely masked for a time, and re-appears after the effect of the ablution shall have passed off.

In drawing off the wine it should not be allowed to flow into an open mouthed cask, in order to be afterwards placed into other vessels. In so doing, the wine is discharged without violence, foams and boils, by which it is deprived of a portion of its aroma and body. It is the better method to draw it off by the syphon, or other tubular instrument, fitted to the small orifice of the fermenting vessel. As the wine gradually flows by this process, the bonnet settles, and finally is quietly deposited on the lees at the bottom of the cask.

Both these still retain a considerable portion of wine. But the bonnet having remained so long in contact with the atmosphere, will have contracted an acidity more or less powerful, according as the operation is more or less prolonged. They must, however, be pressed separately. When the fermentation has been prompt, they should be pressed together, and the juice thus obtained, may be mixed with that of the *decuvage*. The *marc* (grounds) should then be cut up with sharp spades, perfectly clean, and again pressed, and the wine of such second or third pressing, more highly coloured, and put into a separate cask, is sometimes employed to give to the former a colour, body, and slight astringency. The *marc* is subsequently used for a variety of purposes; such as the distillation of an inferior brandy; the manufacture of vinegar, verdigris, the food of domestic animals, and the distillation of an ordinary beverage for labourers and domestics, and known under the appellation of *piquante*

or *buvande*. This liquor is usually prepared in the following manner:

The mass, which when drawn from the press is compact and solid, is first broken up; then water is thrown on the crumbled mass, in such a quantity as is proportioned to the pressure to which the *marc* has been submitted. In this state, it is left for twenty-four to forty hours, according as the temperature of the atmosphere is elevated. The liquor obtained from this process may be kept several months, and where an addition of five per cent. of good must be added, a tolerably well flavoured light wine may be extracted, of some body, *piquante*, and capable of conservation.

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*Of the care and precaution necessary before putting the wine into casks.*

WINES in general are far from being complete at the moment of consigning them to the cask. They still contain a portion of sugar, which is continually undergoing a decomposition. The fermentation, now more mild and tranquil, disengages, nevertheless, in abundance, the carbonic acid gas, which continues to keep in movement the whole liquid mass, raising and uniting at the surface all the extraneous matter contained in the cask, and forcing it out at the bung, which for that purpose should be left open. The loss

occasioned by this indispensable purification must be replaced with care, and the cask kept constantly filled.

Immediately above the opening is placed a large vine leaf, covered with sand, which is to be withdrawn whenever the cask is replenished. In some countries, wine is daily added to fill the cask during the whole of the first month, every fourth day during the second, and every eighth day after that period. In other places (as, for example, the neighbourhood of Bordeaux) they commence the operation of which we have spoken, at eight or ten days after the wines have been placed in the cask. One month afterwards they close up the bung hole of the cask. When the insensible fermentation has completely ceased, the whole is accomplished, and the process finished. By imperceptible degrees, the wine becomes clear and transparent. All foreign matter contained in the cask, and held in suspension, is precipitated, or deposited on the sides of the vessel. A mixture of tartar, of colouring matter, and of the substance vegeto-animal in part decomposed, forms a thick coating, which takes in this state the name of lees. The slightest causes will now affect the wine, a jar, by which the cask is moved, an elevation of temperature, thunder, or other meteorological causes, will undoubtedly set in motion the liquid mass, revive the fermentation, and change the transparency of the wine, into a thick, turbid condition. To obviate an inconvenience so serious, the wine is transvased at different periods, and the foreign matter which

may cause such mischief, withdrawn from the cask.

The wines of the hermitage are thus withdrawn in the months of March and September; those of Champagne, in October, February and March.

This operation, which is never performed but during dry, cold weather, should be done by means of a pump, employed in the wine houses of many proprietors.

This instrument is a leathern tube, terminated by wooden pipes; one end of which is fitted to the spicket of the cask to be discharged, the other to the bung of that into which the wine is to be transvased. The flowing of the liquid will cease when half the mass has been withdrawn from the vessel, but the discharge must be continued by means of the bellows. Through the agency of this instrument, the pressure of the air is brought to act on the wine as the head is lessened, and the liquid thus forced to pass through the tube into the other cask. The transvasing must not, however, be indiscriminate, or performed at all seasons, without due attention to circumstances familiar to the vintner.

"It is well understood," says Mr. Parmentier, "that the wines work in the cask, and rise, perhaps, two inches, both in spring and autumn; and it is a few days before these periods that the operation of transvasing should be performed. The frequency of this necessary work varies according to the different qualities of the wines. Excess in these cases is as dangerous as a neglect of the operation."

At Bordeaux, and in many other districts of France, the transvasing is never performed but with a north, or northwesterly wind. It is believed that the air deprives the wines of a portion of their delicate flavour, and particularly when the wind is at the south or southeast.

The winds at east or west, are, at Bordeaux, believed to exercise a less unfavourable influence on the quality of the wines. There are many who ascribe to the *moon* an important influence, and are particularly careful not to agitate or work among their wines during the first and last quarters of the luminary. But transvasing alone will not be sufficient to extract from the wines all those substances which tend to acidity. We are obliged frequently to employ other means to remedy the evil, such as clarifying by fish glue, burning sulphur papers in the cask, all of which tend to precipitate the hostile foreign substances held in suspension, and thus lessen their deleterious influence. Fish glue is generally the means used to clarify the wines. The mode of using the ingredient, is to cut it into particles, and dissolve them in a small portion of the same wine on which it is intended they shall act. When thus immersed, they swell, soften, and dissolve, forming a glutinous mass, which is poured into the cask to be clarified, which must be again rolled from side to side, and so shaken that the whole may be completely mixed. There are many vintners who whip up their wines with small birch rods, till they are covered with a thick froth or foam, which they collect carefully and take out of the cask. The dissolved in-

gredient or clarifying matter, seizes as it were on the impurities contained in the liquor, and precipitates them as it descends to the bottom of the cask.

In some cold climates, the vintners substitute, during summer, the white of eggs in the place of fish glue. Five or six are sufficient for half a pipe of wine. They are beaten up in a small tumbler of wine, and when in a proper state thrown into the cask, the contents of which are agitated with rods, till the whole mass be properly mixed. But it requires great precaution in the performance of this operation, because it sometimes happens that in using an egg, which though not yet changed, has lost its freshness, the fine perfume of the wine is affected, if not seriously injured. Wines in France are sometimes clarified in another manner, by which any unpleasant odour contracted may be driven away.

The means employed are, to take the chips or shavings of the beach wood, which must be previously stripped of its bark, and boil them in water, after which they must be perfectly dried, either in a furnace, or by the rays of the sun, and then thrown into the cask. This excites in the wine a new though slight fermentation, by which it becomes completely clear in the course of twenty-four hours. Notwithstanding that the fish glue or white of eggs, acts with force on the liquids, into which it has been introduced, it has been found impossible to take up by these means all the extraneous matter contained in the cask, but that small particles of leaven, in despite of the most unwearied attention, constantly escape,

the action of which in floating through the mass is to induce a constant tendency to acidity, by which the wines are deprived of their delicacy and flavour.

It is to prevent this acid degeneration, that the burning of sulphurated paper is used, the liquor is impregnated with the vapour of sulphur. The composition of sulphur matches, used in this process, is different in the different wine countries.

Some vintners of France melt down the sulphur, and plunge into the liquid brimstone broad tape of cotton thread, or silk, till it be completely coated with the sulphur, others mix with the sulphur, before submitting it to the action of the fire, various aromatic substances. In our own country also, there exists among skilful vintners, a difference in the manner of using the matches thus prepared. In some of the districts, the match is suspended by an iron wire, and when ignited, introduced by the bung hole into the cask. When the combustion is complete, and the cask charged with the sulphureous vapour thus disengaged, the vessel is filled, and the bung hole tightly closed. There are some again who put two or three buckets of wine into the cask, then set fire to the match, close up the bung hole, and agitate and roll the cask to and fro, with violence. This is again done when the match is consumed, and repeated until the vessel becomes completely charged with vapour. The operation, in the first instance, causes the wine to be thick and troubled; but finally it becomes clear, and completely re-established.

*The Maladies of Wines.*

THE wines prepared according to the method here described, and which have been deposited in a cave or cellar, having a northern exposure sufficiently deep, somewhat lighted, and sheltered from the variations of temperature, and mechanical causes, which shake or disturb them, or stir up the lees, retaining them in suspension in the middle of the liquid, by which the tendency is determined, are capable of different degrees of conservation, and may be preserved a longer or shorter time, according to their several varying circumstances. In general, the wines of a highly delicate flavour, are but seldom susceptible of a long preservation. The maladies most frequently occurring, the most seriously affecting their quality and character, and to which they are peculiarly exposed, are those known amongst the profession as the *fat*, (*graisse*) and the acidity. By the former disease, the natural fluidity of the wine is changed, which is succeeded by a turbid condition, in which the liquor becomes stringy, thick, and ropy, like unsound oil. This malady more particularly attacks white wines, and such as foam and effervesce, and in general those which have been imperfectly clarified, or possess but little body. It appears probable, that where such wines are put into bottle before they have undergone all the different periods of fermentation, they are exempt from this malady. It is stated by Mr. Parmentier, that he has seen in

Champaigne, the half of a cask, drawn in the month of March succeeding the vintage, pass to the state of "*graisse*," whilst the other half of the same cask, which had been put in bottle in September,\* remained constantly in the premature state. The most simple method to remedy this inconvenience (adds this writer) is to transvase the wines thus affected, on the lees of a cask recently emptied of its contents, to roll it afterwards into the wine vault, and when sufficiently cleared, to draw it off into another vessel. Time alone is necessary to re-establish such wines. It is uncommon for them to remain in such condition more than one year. As soon as it is perceived that in pouring it into a wine glass, it presents an eye or bubble which attaches to the side of the glass, nothing more is necessary than to leave the wines to themselves. In this state of quietude they resume, little by little, a clear transparency, showing no trace of the alteration which they have undergone. It is much less easy to find a remedy for the acidity. This malady, which like the other is incident to the wines of a less spirituous character, is generally the result of a feeble constitution, or of negligence in the exercise of that care which their peculiar condition requires.

In fine, wherever the leaven predominates, it decomposes the saccharine matter, acting on the

\* Our author leaves us here to conjecture, whether that portion of the cask, which remained unhurt by the malady, had been bottled at the vintage, which in Champaigne is at the latter end of September, or whether a year had elapsed between the vintage and the bottling.—TRANS.

other principles of the liquid, and producing an acidity, which is only to be arrested by means of fish glue, the action of sulphur, or by decanting. As the wines never assume the acidity mentioned till the alcoholic fermentation has completely subsided, it is easy to postpone the period of danger, by putting them into bottle before the substance "*sucrée*" has entirely evaporated. The fermentation then proceeds, or is prolonged without being menaced by the danger of acidity. It is from such considerations that the vintner frequently adds to his wines in cask a portion of sugar. When the cask is constructed of wood exposed to the varieties of temperature, or which imparts to the wine an unfavourable astringency, or is sufficiently porous in texture to allow an escape of the alcohol, or elastic fluids; where the vaults are not of the proper depth, so that there exists a temperature above ten or twelve degrees, centigrade (fifty-two to fifty-six degrees Fahrenheit) so that the lees remain floating through the liquid, the wine always has a tendency to acidify. This should excite no surprise, for the circumstances are precisely those required for the process of acetation.

There are particular periods of the year always critical to newly made wines, at which such maladies acquire a Herculean power, and by their pernicious effects are immediately detected by the experienced vintner, and can scarcely escape an ordinary observation. Such, for example, are first, the return of heat; the movement, also at which in the vine the circulation of the sap commences, the period of flowing; that at which

the blossom drops, and again when the grape commences to change to purple. These different periods bring with them their several unfavourable accompaniments, in which we may often remark a perceptible degeneration in wines of a light and feeble character, or which have received but little attention in their management and conservation. A sudden change of temperature during warm weather, is often sufficient to acidify those wines, which, from their unfavourable situation in vaults injudiciously constructed, are exposed to such an evil. "In countries," says Chaptal, "where wines possess an extraordinary value, and where, as a consequence, avarice frequently induces an admixture of the wines of an inferior vintage, with those of a more favourable season, it has been remarked that the first appearance of the acid degeneration is detected on the surface of the liquid contained in the cask, whence it descends from time to time, as the change goes on, till it has affected the whole mass." As soon as this is perceived, it is the practice of our most experienced vintners immediately to draw off the wine from the lower part of the cask, so as to separate the sound wine below from that which is thus affected above. In doing this, it is hardly necessary to add, that a great degree of care will be required not to agitate the wine, so as to mix the wine of the superior surface with the sound wine below. By this simple, yet effective means, it is apparent, that the moment the change is threatened, it is easy to rescue a large portion of the contents of the cask from the effects of the malady. It

is probable that this malady first attacks the wine in the neighbourhood of the bung hole, because of its free communication with the air; and affects in time the whole inferior mass.

As we have perceived, it is by no means difficult to prevent this evil, and protect the vintage from the destructive consequences which ensue, by neutralizing the excess of leaven by honey, or the addition of must, and by interrupting the free communication between the atmospheric air and the liquor contained in the cask. But where the acetation is once determined, no remedy for the evil exists. The malady is incurable. All which then can be done is to arrest the acidity in its course, and prevent it increasing till the wine becomes entirely sour. This may be effected by neutralizing, through the agency of saccharine substances, the action of the vegeto-animal principle, which is still in suspension, and by such means, masking the unpleasant flavour already contracted, by the paramount effects of sugar or other ingredients.

Several writers on wine making recommend the use of chalk, of ashes, of alkalies, and of lime, which absorb or take up the ascetic quality till they become saturated by it. This method is rejected, however, by Mr. Parmentier, who contends that these different substances form the soluble combinations of which the immediate effect is to dispose the wine to a complete decomposition. There are other alterations to which wines in general are disposed, which, though less injurious in their results, deserve to be carefully examined. Such, for example, may be considered

the taste of the cask, that of mould or must, with others of the like character.

It is not always practicable to correct the former, but it may be greatly lessened by means which render the wine a tolerable beverage. The best method is, to draw it from the cask, as clear as can be effected, by avoiding carefully all movement from which the vessel may be agitated. It is the practice of some vintners, to mix such wines with others that are sound and of strong body. When such mixture becomes complete, it is allowed a few days to repose, then carefully transvased, and put into a cask recently emptied of its contents; or it is frequently deposited on sound lees, and the cask containing it rolled backward and forward in the vault. It is prudent to abstain by all means from the use of lime water or carbonic acid.

“It is contended by some skilful vintners,” says Mr. P. “that in transvasing the wines into a cask in good condition, well prepared by a fumigation of sulphur, and to which has been added a few ounces of peach kernels, it is possible to correct the unpleasant flavour arising from mould. It is the opinion of others, that to take the fruit called medlars, fully ripe, cutting them into quarters, running through them a strong twine to keep them together, and throwing them into the wine, where they should remain a month, at the expiration of which time they should be withdrawn, will produce a favourable effect in restoring an unsound wine. It is believed that this fruit possesses the quality of absorbing the unpleasant taste imparted by the accumulation of

mould in the cask, and by thus appropriating it, relieving the wine of the injurious flavour so contracted. Some recommend an infusion for two or three days of cheese, or a crust of toasted bread. There can be no doubt that if the mould arise from sulphurate hydrogen, such farinaceous bodies, reduced to a state of carbon, may be efficacious; but it is with such wines the same, as with those that have become affected by the taste of the cork.

No certain means exist, which are known to the profession, by which the evil can be corrected. They are to be prevented by a perfect cleansing of the wine vessel, and by a judicious choice and preparation of the corks.

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### *Bottling the Wine.*

As soon as the wines have been a sufficient time in the casks to allow a full and complete clarifying, and the isinglass or other material used for the purpose, has taken up and appropriated all the foreign substances with which they are charged, and which exercise an influence so unfavourable to the results of the vintage, they should be carefully and judiciously put in bottle, there to undergo the insensible fermentation from which they receive the last degree of ripening, and which may be regarded as the final im-

provement available to the skill of the experienced vintner.

In order that the transparency of the wines should suffer no injurious change during this operation, it is advisable to adopt the practice of the French vintner, to introduce into the cask, about two inches from the bottom, a wide mouthed spicket, the interior circumference of which should be covered with a thick gauze, extending across the diameter so as to intercept the fish glue, and residuum, and prevent thereby the passage of such substances, into the vessel intended to receive the pure wines, about to be put in bottle.

That your wines should possess a generous and agreeable flavour, it is imperative that they be fully matured and ripe, and to this object the insensible fermentation is an indispensable prerequisite. If it be a conceded point, that they do not acquire this character except they ripen in large mass, it is also admitted that having acquired this advantage, it is equally important to the final result, that when put into bottle they should be well corked, hermetically closed from the action of the air; as without that precaution they never can attain that deep, strong body, that fixed hue, and soft, velvet like (*veloute*) delicacy, which form the essential character of a fine old wine.

When thus effectively corked and sealed, the bottles allow no passage to the internal transpiration, or external humidity; whereas the best constructed wooden vessels are not impervious, allowing the filtering and transpiration to pass by

the pores. In the first case, the fermentation continues with an active movement, whereas in the second, it is sluggish and insensible. There is, however, a danger of putting the wine in bottles too soon. Such ill timed haste is to be avoided, for, far from improving its quality, they suffer an injurious deterioration by the indiscretion.

The bottles intended for this service require a careful selection. They should be clear, perfectly united, free from flaw or blemish, and by all means without that excess of potash, sometimes found in our glass manufactured vessels. Without this latter precaution, the wines will soon part with their flavour, their odour, and deep purple tinge, and their chief excellence may thus be lost. The bottles should first be rinsed with pure water, and then cleansed with sand, or gravel. When they are intended to receive a fine dessert wine, it will be judicious to saturate the extremity of the cork, by plunging it into brandy, before closing the bottle. The cork frequently contains a considerable quantity of the astringent principle, and as this astringent principle, when brought into action by a contact with the wine, and changed moreover with the vault, determines the mould with extreme facility, it will be necessary to adopt the precaution of steeping the corks, (first shaving off the point, below which it is to enter the bottle, a small portion in order to expose a new surface,) into hot water, and when fully saturated, to dry them either by fire or the rays of the sun, (the latter being preferable when time will permit) before using them. Where the cask is

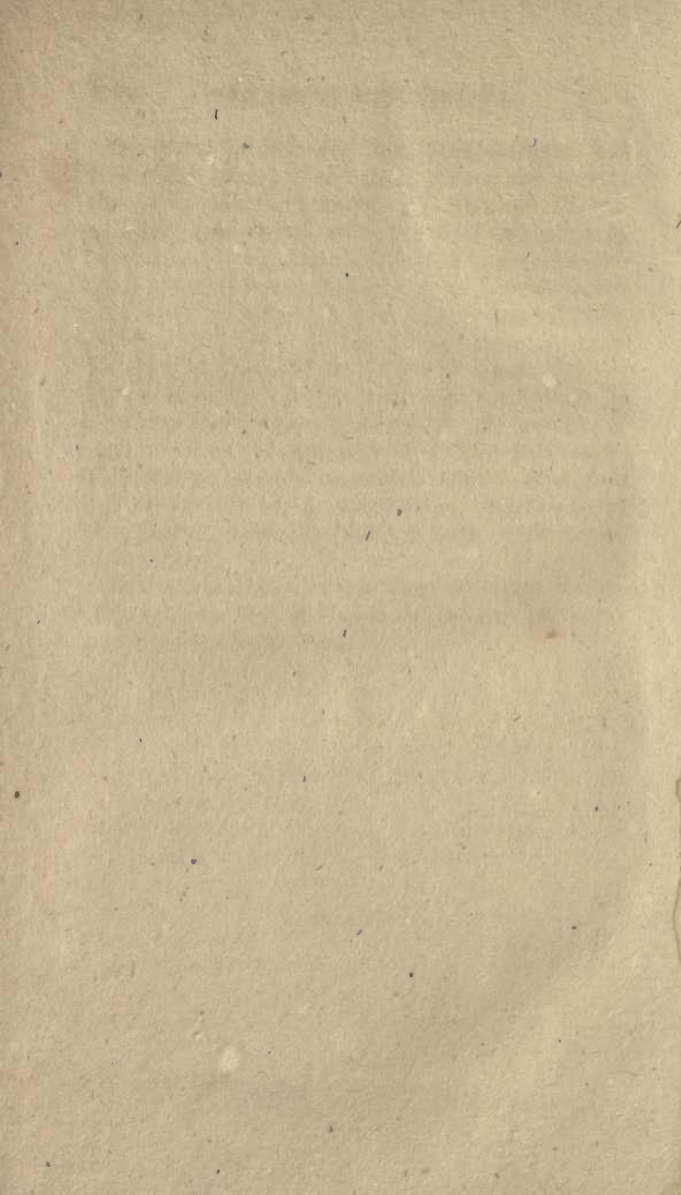
spongy or porous, allowing the liquor to penetrate or escape by the pores, or where it has been perforated by the cork screw or other instrument; in fine, where any imperfection exists, it should be rejected. A negligence in this case will almost insure an unfavourable change in the wine. When the bottle is filled within an inch of the mouth, it should be carefully closed and turned, so as to judge whether the wine will leak out and escape when left on the shelf. It should then be placed on the side, in the vault, or other position destined for its reception, on a frame or lattice, in ranges or piles, of ten or twelve deep, which should be so strong as not to bend beneath the weight of the superincumbent mass. To protect the wines from the injurious effects to which they are exposed from light, it is the practice of many vintners to cover the bottles when thus arranged, with sand, the character of which, where the choice is at command, should be silicious rather than calcareous; and a preference should be given to a vault which is damp, and rather warm. The first of these means is that usually adopted, because it is more expeditious, and occasions less breakage. In drawing the wine from the cask, it will be prudent to suspend the work on approaching the bottom, when but little remains in the vessel. The cask should then be carefully raised (if tilted) and remain at rest till the following day, on which the last of the contents should be drawn off, bottled and placed in a different quarter of the vault, to be used the first, or consumed for ordinary, or culinary purposes.

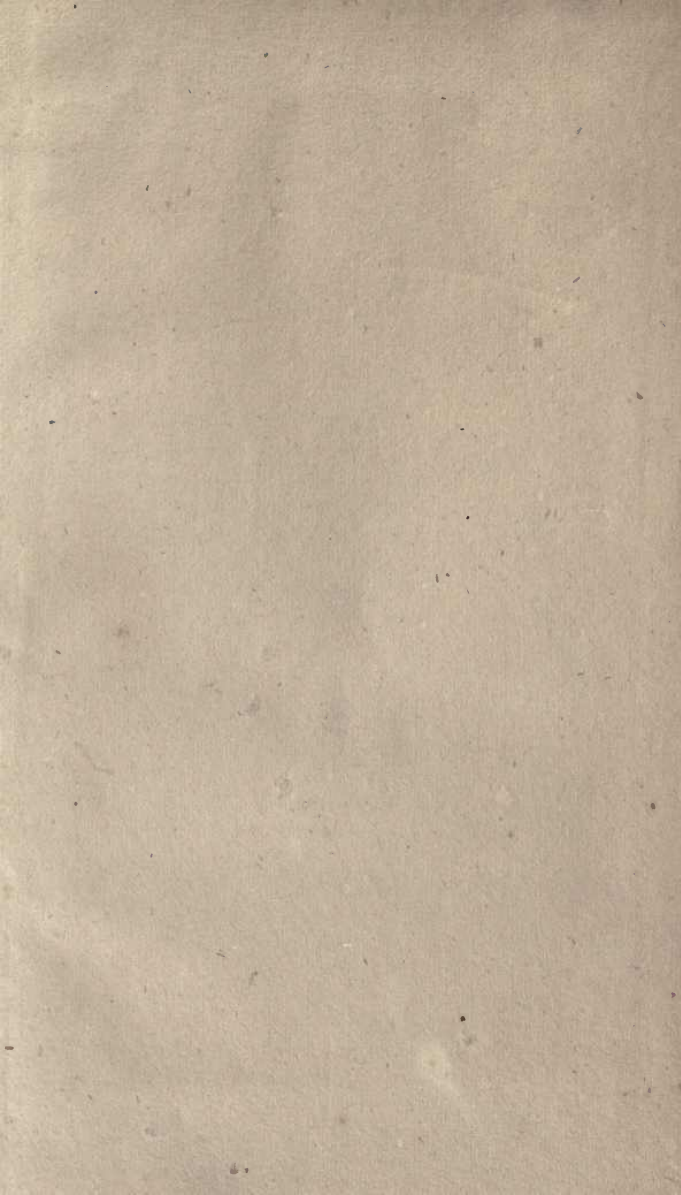
In order to interrupt all communication between the wine and the atmosphere, and protect the cork from the humidity of the vault, the ravages of worms and effects of dust, which may accumulate around it, and impart an unfavourable influence to the contents of the bottle, it will be prudent to seal the cork with a composition, of which the following is that adopted by many of our vintners skilled in the conservation of wines. White pitch, rosin and turpentine in equal portions, united with double the portion of each of these ingredients of yellow bees wax. This mixture should be melted over a slow fire, into which the top or neck of the bottle should be plunged, securing first the cork with twine or iron wire.

It is particularly in the case of wines which effervesce, or fly, that this latter precaution is considered most necessary.

THE END.







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